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CHRONIC THYREOTOXIC MYOPATHY, WITH THE REPORT OF A CASE INCLUDING ELECTRO-MYOGRAPHIC STUDIES.

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SINCE Brain[1][2] classified the myopathies associated with thyreotoxicosis in 1938 a number of new cases of chronic thyreotoxic myopathy have been reported, and the subject has been reviewed by McEachern and Ross[3] and by Thorn and Eder.[4] A series of cases has also been reported in the French literature,[5][6][7][8] which so far as we can determine has not received the attention of any English-speaking reviewer. The present study was stimulated by the investigation of a case of this disease at the Repatriation General Hospital, Springbank, in which electromyograms were made by one of us (W.R.A.). As this condition has not to our knowledge been previously reported in Australia, and as some of the recent reports are not available in Australian libraries, we consider it worth while to review briefly the whole subject of thyreotoxic myopathies.

Classification.

The classification suggested by Brain[1] was as follows: (i) exophthalmic ophthalmoplegia, in which there are external ocular palsies which are probably secondary to the mechanical factors producing gross exophthalmos (this condition is not relevant to the present study); (ii) myopathies—(*a*) acute thyreotoxic myopathy—a rapidly progressing bulbar palsy and general muscular weakness usually ending fatally in a few days or weeks, (*b*) chronic thyreotoxic myopathy—an insidious muscular weakness affecting mainly the muscles of the proximal segments of the limbs, the weakness being accompanied by wasting and fasciculation of the affected muscles, (*c*) thyreotoxic periodic paralysis, similar in its manifestation to family periodic paralysis; (iii) *myasthenia gravis* associated with Graves's disease.

Historical Review.

Before the disorders were thus classified the majority of these cases were reported as cases of *myasthenia gravis*. Brain[2] considers that some of these cases were wrongly classified, and that Cohen and King[9] incorporated in their review cases of *myasthenia gravis* and exophthalmic goitre which were in fact examples of exophthalmic ophthalmoplegia or thyreotoxic myopathy. Heuer[10] was probably the first to recognize a case of acute thyreotoxic myopathy, which he called acute bulbar palsy complicating Graves's disease. He found 12 cases in which these conditions were associated in the literature of that time, and of these four had an organic neurological cause found at autopsy, two appeared to be cases of *myasthenia gravis*, and the nature of the remainder was uncertain. Zondek[11][12] described this condition under the name *coma Basedowicum*. Recent cases have been reported by Laurent[13] and by Sheldon and Walker.[14] Chronic thyreotoxic myopathy was probably first described by Bathurst in 1895,[15] although his case exhibited some unusual features, and other cases were described by Ayer *et alii*,[16] by Brain and his associates,[1] by Parsons and Twort,[17] by Mackenzie[18] and by Morgan and Williams.[19] These cases were reviewed by McEachern and Ross,[3] who added three original cases, making a total of 13 well described cases to that date. Thorn and Eder[4] added a further five new cases in their review. Both these reviews added to our knowledge of the clinical variants and metabolic abnormalities of the disorder. A further 14 cases have been reported in a series of papers from Lyons.[5][6][7][8] Thyreotoxic periodic paralysis has been reviewed by

Talbott,[20] and in a comprehensive review of the whole subject of periodic paralysis he found 35 cases. The association between *myasthenia gravis* and thyreotoxicosis was found to have been reported 23 times by Cohen and King,[6] and although the clinical details given in their review are scanty, it is probable that most of these actually were cases of *myasthenia gravis*. More recent cases have been reported by Thorner,[21] by Kowallis *et alii*,[22] by Carson and Keynes,[23] by Flynn,[24] by Moore,[25] by Cohen,[26] and by Thorn and Eder (1946).

Report of a Case.

G.S.G., aged twenty-six years, was admitted to the Repatriation General Hospital, Springbank, on May 11, 1948, for investigation. His complaints were loss of energy, fatigue, intolerance to heat, excessive sweating, rapid heart action, tremor and loss of weight. Symptoms were first noticed in 1944 when he was doing a navigation course in the Royal Australian Air Force and found that he could not concentrate at his study and that his heart beat rapidly. He became languid and easily fatigued, and after his discharge from the Royal Australian Air Force in November, 1945, he began to lose weight, his hands became tremulous, he sweated excessively and disliked hot weather intensely. These symptoms progressed, and when admitted to hospital he was 21 pounds below his normal weight despite an excellent appetite, and he became so easily fatigued that he could not carry on his employment as a carpenter efficiently. Sustained muscular effort was impossible, and he found it difficult to climb a ladder because of the weakness of his knees. For eighteen months his friends had noticed his voice changing and complained that he did not speak distinctly. He had not noticed this change and he had no difficulty in swallowing. He did not think he was appreciably weaker at the end of the day. There was no significant illness in his previous history or in his family history.

Examination showed the patient to be a tall, thin, nervous young man with flushed skin and a tremor of the fingers. His voice was windy and nasal as though he had a cleft palate. His weight was ten stone ten pounds. There was no exophthalmos and convergence was normal, but some lid lag was present. The sclerotics were jaundiced. Ocular movements were normal. The tongue did not protrude fully and fascicular twitching was noted mainly around the margins. The palate moved on phonation but did not completely occlude the naso-pharynx on gagging. The thyreoid gland was symmetrically enlarged, mainly in the posterolateral parts. The apex beat of the heart was forceful but not displaced, and the sounds were regular with a Grade I apical systolic bruit. The pulse rate was 130 per minute. The blood pressure was 155 millimetres of mercury (systolic) and 75 millimetres (diastolic). The lungs and abdomen appeared normal. The skin was warm and moist. There was wasting of the muscles of the shoulder girdle and arm, particularly of the triceps, and of those of the thighs, particularly the quadriceps. Occasional coarse fasciculation was seen in the muscles of the shoulder girdle and in the triceps. No abnormality was found in the muscles of the forearms and leg. The strength of the affected muscles was decreased and they were rapidly fatigued. After an injection of one milligramme of "Prostigmin" there was some subjective and objective improvement in muscular power and the voice, but not a complete return to normal. Myograms were not made to measure this increase. Kyphoscoliosis of the thoracic part of the spine was present. Examination of the central nervous system revealed no abnormality. The left testis was atrophied as a consequence of orchitis complicating mumps; the right testis was normal. Examination of the urine revealed no abnormality.

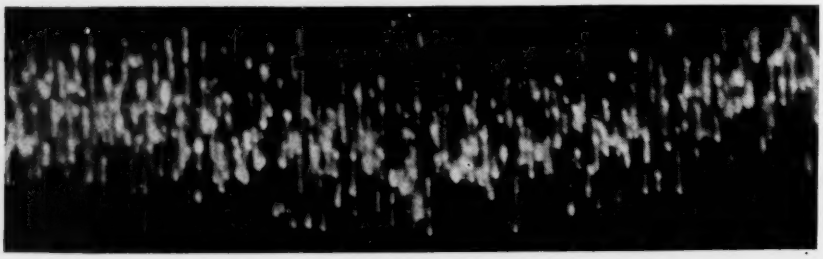

FIGURE I. Before operation: muscle spikes during moderate contraction.

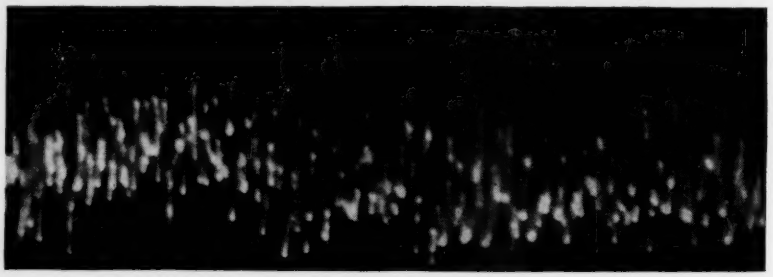

FIGURE II. Before operation: muscle spikes during moderate contraction.

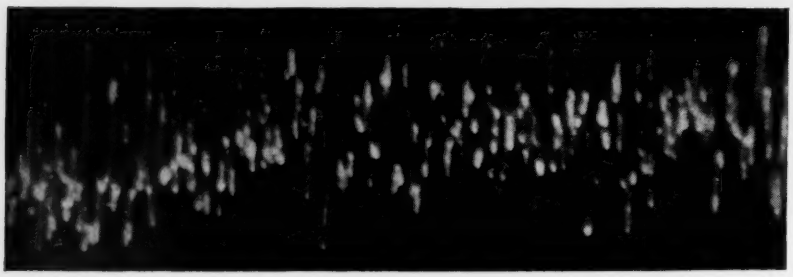

FIGURE III. Before operation: moderate contraction fifteen minutes after "Prostigmin".

No radiological abnormality was found in the thorax, and no evidence of osteoporosis in the long bones. An electrocardiogram revealed sinus tachycardia; the tracing was otherwise normal. The blood picture was within normal limits. The basal metabolic rate on May 13 was +98%, and on May 20 it was +68%. The blood cholesterol content was 116 milligrammes *per centum*. The galactose tolerance curve was represented by a straight line rising to 65 milligrammes *per centum* at sixty minutes and falling to 10 milligrammes *per centum* at 120 minutes. A number of liver tests were performed. The icteric index was 31. The urine did not contain abnormal amounts of urobilinogen. The equivalent of 3·7 grammes of benzoic acid was excreted in four hours. The cephalin-cholesterol flocculation test gave a negative result. The colloidal gold test with the patient's serum gave a negative result. The serum protein content was 6·7 grammes *per centum*. Prothrombin index (Quick) was 100%. The urinary creatine excretion was 0·28 gramme a day, and the urinary creatinine excretion was 1·8 grammes a day (whilst the patient was receiving an ordinary diet). An electromyogram was made.

A diagnosis of severe thyreotoxicosis with chronic myopathy was made and treatment by subtotal thyreoidectomy decided upon. The patient was prepared for operation. He was given a diet rich in carbohydrate, protein and vitamins, supplemented by oral administration of a multiple vitamin

preparation and thiamine hydrochloride (50 milligrammes daily). He received iodine and phenobarbital. On this treatment the evidence of thyreotoxicosis became less, there was some increase in muscular power and the jaundice disappeared. Immediately prior to operation he was given 25 grammes of glucose intravenously. Subtotal thyreoidectomy under cyclopropane anæsthesia was performed on June 7 by Dr. A. F. Hobbs. About nine-tenths of the gland was removed. A biopsy was taken from the right *pectoralis major* muscle.

The post-operative course was not complicated. Within a week there was considerable remission of the symptoms of thyreotoxicosis. Improvement in the patient's voice was apparent on the day after operation, and the strength of the limbs was increased after a week. This improvement was maintained, and in four weeks the patient's muscular strength had returned to normal, no fasciculation could be seen and the affected muscles increased in bulk. The voice lost its "cleft palate" quality, but remained nasal because of allergic rhinitis. There was now no evidence of thyreotoxicosis and the basal metabolic rate was −6%. The rate of urinary creatine excretion was 0·12 gramme a day, that of urinary creatinine excretion 1·5 grammes a day. A further electromyogram was made and the patient was discharged from hospital on July 6. He was reviewed in four weeks, when he felt well but complained that he felt the cold weather severely. Examination revealed further gain in weight, some further muscular improvement and no evidence of thyreotoxicosis. Another electromyogram was made, the basal metabolic rate was −7%, and the rate of urinary creatine excretion was 0·09 gramme a day, and that of urinary creatinine excretion 2·0 grammes a day. At the last review on November 20 he was feeling well and considered his strength normal. His muscular development and power were now good, though he still had a dorsal kyphosis. There was no evidence of thyreotoxicosis. His weight had remained stationary at twelve stone for the last two months. He was going to begin work again. Examination of microscopic sections of the thyreoid gland, which weighed 52 grammes, showed the usual picture of toxic hyperplasia with partial involutional response to iodine. The muscle biopsy revealed no abnormality.

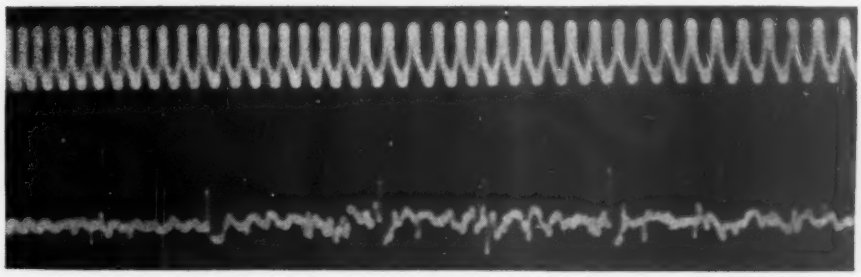

FIGURE IV.

After operation: recruitment of a single motor unit from a condition of complete relaxation. Timing trace in this and subsequent records, 50 cycles per second.

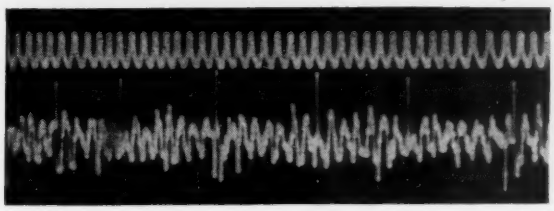

FIGURE V.

The same unit as in Figure IV firing eight to ten times per second, higher amplification used.

Discussion.

The clinical picture and the course of the disease in this case are fairly typical of chronic thyreotoxic myopathy. There was evidence of severe thyreotoxicosis without gross exophthalmos or enlargement of the thyreoid gland. The patient complained most of the weakness of his legs, and although quadriceps wasting had occurred this was less than that of the triceps and the shoulder girdle muscles. The distal portions of the limbs were not affected. The muscles became fatigued rapidly, and occasional fascicular twitching was noted in them. This was coarser than the fibrillary twitching of progressive muscular atrophy, and tended to recur in the same group of fibres. The more uncommon features were the age of the patient, the bulbar paresis, and the degree of elevation of the basal metabolic rate. This disease predominantly affects those in the middle age group, between the ages of thirty-nine and sixty years. Other patients of a comparable age to our patient have been reported;[3][4][5] they have all been females, and over half of them have died either before or soon after treatment. Until the recent paper by Devic *et alii* was published, the disease was regarded as affecting the sexes in the ratio of four males to one female. The French workers in a series of 14 cases had only one male patient. Until a greater number of cases are collected, it would not be wise to make any assessment of the sex incidence. Bulbar involvement is uncommon and in previous cases it has usually been associated with such a severe general muscular weakness that the patient has been bed-ridden. In these cases the pharyngeal and laryngeal muscles were affected most severely, in contradistinction to our case, in which the tongue and palate were the only parts found to be affected. The course of the disease in our case was more protracted and benign than in most other cases, in which the patients came under observation usually within a year of the initial symptoms.

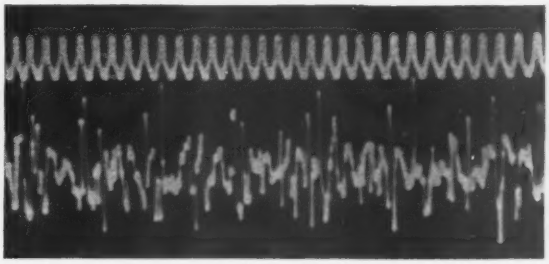

FIGURE VI.

A slightly more powerful contraction than in Figure V, with the recruitment of a second motor unit, firing four to five times per second, amplitude 300 microvolts.

Certain clinical features of the disease may have to be revised in the light of the recent papers of Thorn and Eder and of Devic *et alii*. We have already referred to the sex distribution. The presence of muscular fasciculation was noted once in the 19 cases of these two series and was specifically noted as absent in two of the five cases of Thorn and Eder and presumably was searched for in the others. Devic and his collaborators also state that fibrillary twitching was absent in all their cases, but they appear to be unacquainted with the English literature in which this was described; as patient waiting (in our case for up to five minutes) and close scrutiny are necessary to observe this sign when it occurs only occasionally, this may have been present and not observed. However, it appears that fasciculation is not an essential and possibly not a frequent occurrence in the involved

muscles. The response to "Prostigmin", which has never been regarded as a constant finding, was negligible in the four cases in which it was tested by Thorn and Eder. It was apparently not tested by the French observers. In our case there was apparent improvement, but this was not measured, and thus cannot be regarded as proved. The diminished tendon reflexes which Brain described have not been found by most other observers, and indeed the nervous system has been normal in almost all subsequent cases. All reports agree that the most striking and characteristic feature of the disease is the complete restitution of function that follows treatment of the thyreotoxicosis, whether this is medical or surgical, and in the case of surgical treatment the improvement may be apparent within a day or two.

An important new fact has been found by Thorn and Eder, who, noticing testicular atrophy in their two male patients, carried out an estimation of 17-ketosteroid excretion in four cases and found a significantly low figure in each case. The other patient, who was not subjected to this estimation, died, and at autopsy was found to have atrophy of the glomerular layer of the suprarenal cortex.

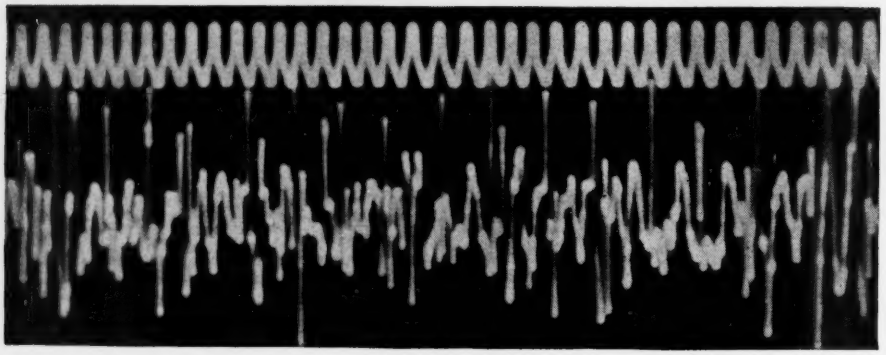

FIGURE VII.

A moderately powerful contraction showing activity in a number of motor units. Spike duration much shortened.

In the treatment of the two males, Thorn and Eder found that, after the appropriate treatment had controlled the thyreotoxicosis, administration of methyl testosterone produced a further improvement in the state of the muscles. They also confirmed the disturbance in the creatine metabolism, finding a spontaneous creatinuria of from 100 to 590 milligrammes per twenty-four hours, and considerably less retention of creatine than normal in response to the creatine tolerance test. There was a significant decrease in the creatinuria shortly after treatment began. In commenting on these findings they bring forward experimental and clinical evidence that the steroid hormone requirements are increased in thyreotoxicosis. They also cite evidence that testosterone propionate has a pronounced nitrogen-retaining effect even in the presence of thyreotoxicosis, and that the adrenal cortical hormone has a direct effect on the metabolism of muscle. They discuss the biochemical implications of these findings, and conclude that chronic thyreotoxic myopathy cannot be explained on the basis of a simple exaggeration of the usual creatine metabolic defect in thyreotoxicosis, but that the defect may be one rather in the direction of failure to maintain adequate synthesis to meet the abnormal demands.

The particular contribution of the French observers has been in the histo-pathological changes of the affected muscles. Previous observers have recorded a variety of findings, from normal tissue to simple atrophy and fibrous replacement, fatty infiltration, or degenerative changes in the nuclei and loss of longitudinal or transverse striation. The presence of "lymphorrhages" has also been described. We have not seen the original descriptions of the work of Noel and Pomme, who, by employing special staining methods, have been able to demonstrate specific degenerative changes associated with the muscular dystrophies. The biopsy findings recorded in the articles we have seen show, in sections stained with iron hæmatoxylin of Heidenhain, the following changes in the motor end plates: "Some motor end plates do not contain any mitochondria, others contain a small number of coarse basophilic particles well stained and of irregular outline co-existent sometimes, but not always, with small groups of granular mitochondrial elements: no part of the filamentous mitochondria was found."

Discussing the muscular dystrophies associated with disease of the thyreoid gland, Devic *et alii* quote a variety of muscular disorders complicating thyreotoxicosis and myxœdema reported in the literature. They hold that all these disorders should be united in a common framework when pathogenesis is under consideration. They reject the concept of a "toxi-infectious" factor simultaneously affecting the thyreoid gland and muscle as not explaining the response to treatment. They likewise reject for the same reason the idea of a lesion in the pituitary gland or hypothalamus as the cause of the associated syndromes, although they cite a certain amount of clinical and experimental evidence which might support such a view. They believe that the thyreoid hormone exerts a direct effect on the muscle, and that the essential lesion is at the myoneural junction, but that the exact mechanism is unknown.

The only original contributions we can claim in the study of this disorder are the recording of a case in which jaundice was associated with chronic thyreotoxic myopathy and the presentation of electromyographic studies before and after successful treatment. The finding of jaundice and liver damage of all degrees is not unknown in thyreotoxicosis. Moschowitz[27] in a recent study has explained this in terms of increased blood flow in the liver, in common with the general increase in blood flow in thyreotoxicosis, with consequent difficulty in maintaining the normal pressure relationships between the circulation of the hepatic artery and portal vein. It is probable that the strain of increased metabolism is also an important factor. In the present case the jaundice served the purpose of focusing attention on the need for pre-operative treatment of the liver. It does not seem probable that there is a relationship between the liver disorder and the myopathy.

Electromyographic Analysis.

The electromyographic tracings were obtained from the patient's right triceps muscle by means of a concentric needle electrode. The impulses were amplified through a four-stage amplifier and recorded by means of a cathode-ray oscilloscope.

The first records were taken on June 1, 1948, prior to thyreoidectomy. The amplitude of the spikes is within normal limits. Their duration, however, is much shortened, the average spike lasting but two milliseconds. With the patient at rest, no fibrillation potentials were seen. Physostigmine sulphate (0·25 milligramme) was then given subcutaneously. After about fifteen minutes, sporadic bursts of spontaneous electrical activity appeared. Each burst lasted a few seconds and then ceased. At this time there was no visible fibrillation in the limb muscles, and relaxation of the patient seemed complete. No alteration in the duration and amplitude of the spikes followed the injection of physostigmine. At all times, the number

of spikes observed during muscular contraction appeared normal. The electrical findings are thus consistent with a diagnosis of myopathy.

A further series of tracings taken on July 3, 1948, was substantially the same as prior to operation. Figure IV shows the recruitment of a single muscle nerve unit, firing at the rate of eight to ten times per second. The amplitude is approximately 200 microvolts. Figure V shows the same unit, a somewhat greater amplification being used. Figure VI shows the recruitment of a second motor-nerve unit, of an amplitude of 300 microvolts, firing irregularly approximately five times per second. The patient then contracted the muscle with moderate force, and Figure VII shows the activity of a number of different muscle units during this contraction.

The duration of almost all the spikes shown is approximately two milliseconds, much shorter than a normal

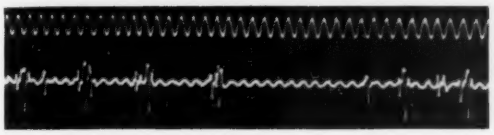

FIGURE VIII.
Two months after operation. Activity in a single unit. Spikes normal in amplitude and duration.

muscle spike. Scattered through the tracing are spikes lasting the normal interval of ten milliseconds. These are rare and seem usually of much greater amplitude than the faster spikes occurring at the same time. These findings suggested that reparative changes in the muscle were as yet slight.

A final tracing on August 12, 1948, differed greatly from the preceding ones and appeared normal in all respects. In Figure VIII is seen the activity of a single motor unit during a minimal contraction. The spikes occupy the normal duration of six to ten milliseconds and are 400 to 600 microvolts in amplitude. They are sometimes triphasic, a phenomenon previously reported by Weddell[25] (Figure IX). Activity during a gradually increasing contraction is shown in Figure X. The units finally recruited are 1000 microvolts in amplitude. Thus the electromyogram is now within normal limits.

Comment.

If concentric electrodes are used, electrical activity is recorded only from muscle units situated within a radius of 0·5 to 1·0 centimetre from the needle. Theoretically, activity within a radius of four centimetres should produce a disturbance at the needle, but in practice the distance has been found to be considerably less. Moreover, the needle electrode shows pronounced directive properties. The bevel of the needle acts as a shield around the central conductor, so that impulses approaching the needle-tip on the bevelled side do not reach the central conductor. Careful rotation of the needle during activity therefore shows maximum activity in one position, with a drop almost to zero after rotation through 180°.

It is thus obvious that great care must be taken in the insertion of the needle, if the maximum response from one or two units is to be obtained. Moving the needle a few millimetres leads to a complete loss of response from a particular unit. Pad electrodes placed on the skin are useless for purposes of diagnosis, as it is no longer possible to distinguish activity in individual units.

During a slight voluntary contraction, activity is normally observed from one or two units firing five to ten times per second. During maximal contraction the rate of discharge increases to 50 times per second. Normally, the amplitude and duration of impulse from a single motor unit are constant. The range of maximum amplitude varies from 100 microvolts to one millivolt. The duration of a single spike should be five to ten milliseconds. The spikes are usually monophasic or biphasic, depending on the needle position. Occasionally polyphasic responses

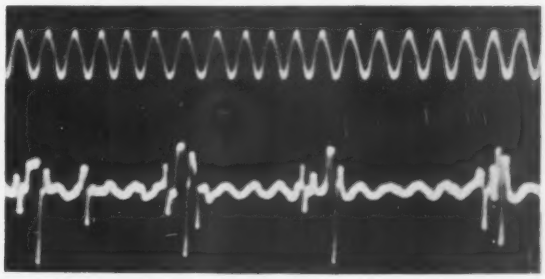

FIGURE IX.
Two months after operation. Normal spikes, duration eight milliseconds, 400 microvolts amplitude. They are sometimes triphasic.

occur, especially in the deltoid, triceps, brachialis and *extensor digitorum communis* muscles.

When fibrillation is present, spikes occur in the absence of voluntary contraction. They are approximately 100 microvolts in amplitude, last about two milliseconds and are repeated two to ten times per second.

In a recent paper on the findings in primary muscular disorders, Kugelberg[29] found that common to most of the types of these diseases which he examined is a shortening of the duration of each muscle spike from four to ten milliseconds to one to two milliseconds. These spikes, often of low voltage, are rare except in the facial musculature, where they are relatively common. Kugelberg suggests that the shortened duration results from a gradual diminution in the number of functioning muscle fibres

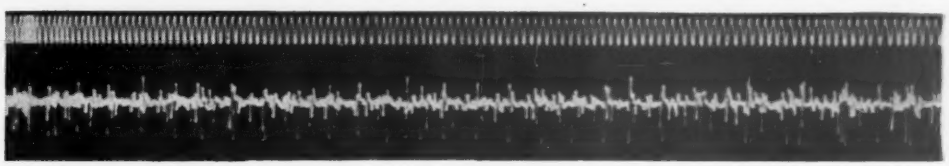

FIGURE X.
Two months after operation. Recruitment of motor units during increasing contraction.

belonging to each motor unit. Its importance in diagnosis lies in its occurrence early in the disease before gross wasting is apparent.

Kugelberg's findings in the commoner muscular disorders may be briefly summarized as follows. (i) Primary muscular dystrophy: The spikes during voluntary contraction closely resemble those of fibrillation, being of low voltage and short duration (one to two milliseconds). When the wasting is gross only single unit discharges may be seen even on maximal voluntary contraction. (ii) Late distal hereditary myopathy: This disease resembles peroneal muscular dystrophy in its distribution. It begins at an age of thirty-five to sixty years in the forelimbs. It is distinguishable from the Charcot-Marie-Tooth type by the absence of cramp and fascicular twitching. The electromyogram shows single discharges, which may be as small as 25 microvolts with a duration of one millisecond. There may be a reduction in spike voltage from 1500 to 500 microvolts in the course of a

single contraction, although Kugelberg considers that needle shift may be responsible for the decrease.

In *dystrophia myotonica* the picture is essentially the same as in primary muscular dystrophy.

In *myasthenia gravis* the amplitude of the spikes diminishes during continued contraction. There is no obvious reduction in the number of spikes. As in the primary muscular dystrophies, extremely rapid action potentials are observed when the paresis is pronounced.

In conclusion, we will summarize the main features of other muscular disorders and briefly review the present concepts of pathogenesis.

Acute thyreotoxic myopathy is a very rare disease and usually runs a rapidly fatal course with extreme weakness of all muscles terminating in respiratory failure. Sheldon and Walker's patient, besides showing a conspicuous

FIGURE XI.

Contrasting the appearance before and two months after operation. The changes in the muscles of the shoulder girdle are well shown.

response to "Prostigmin", survived operation and improved considerably. This case ran a more benign course than most others recorded, but it gives hope that in future prompt treatment may save more of these patients. In view of the rapidity with which Laurent's two patients died this condition may well be regarded as a medical emergency, though one that few physicians are likely to have to face.

Thyreotoxic periodic paralysis has not a familial distribution, but, except that it is modified by the evidence of thyreotoxicosis, it is identical with family periodic paralysis. It responds to treatment of the thyreotoxicosis, and in the case reported by Morrison and Levy[30] operation did not lower the basal metabolic rate to normal, and the seizures continued, but less frequently and in a less severe form.

Myasthenia gravis and thyreotoxicosis have not occurred together frequently. Rennie[31] and Flynn[24] have each reported a case in this journal. The most confusing feature of this combination is the response to treatment of the thyreotoxicosis. There have been reports of the simultaneous remission of the myasthenia,[4][22][24] but a number of other patients have developed much graver muscular weakness and have even died. Moore reported three deaths due to acute *myasthenia gravis* in a series of patients treated with thiouracil. Carson and Keynes report the case of a patient made much worse by thyreoidectomy, and later improved but not cured by thymectomy. Two other patients were treated by thymectomy and removal of adenomata of the thyreoid. Cohen[20] has suggested that the more serious condition should be treated first by thymectomy, thyreoidectomy being performed later if necessary. It would appear wise to test the patient's response to control of the thyreotoxicosis by medical measures before performing a subtotal thyreoidectomy, and thiouracil should evidently be used with caution in this condition.

Devic *et alii* quote a case of myotonia associated with thyreotoxicosis reported by Beckmann (1935), in which notable improvement occurred after thyreoidectomy. They also report two cases of their own, in which spastic para-

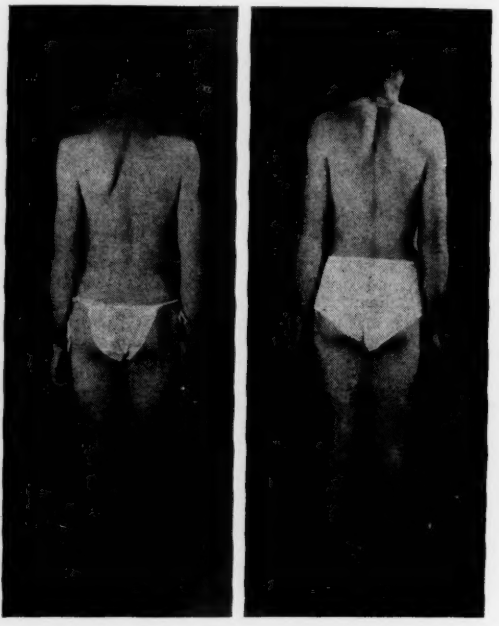

FIGURE XII.

Contrasting the appearance before and two months after operation. The changes in the muscles of the shoulder girdle are well shown.

plegia was present with increased tendon reflexes of the lower limbs, Babinski's sign and abolition of the abdominal reflexes. One patient died after operation, but the other returned to normal. They could find no comparable cases in the literature.

Pathogenesis.

After reviewing these various conditions one is impressed by the fact that the clear-cut clinical picture presented in the classification of Brain are not strictly apparent in all cases. Some show a combination of the features of two conditions: for example, Cases I and II of McEachern and Ross, whilst broadly showing the features of chronic thyreotoxic myopathy, have some characteristics of *myasthenia gravis*, Case IV of Thorn and Eder similarly showed features of both diseases, the case of Sheldon and Walker combines features of acute thyreotoxic myopathy and *myasthenia gravis*, and the difficulty in classifying some of the cases reviewed by Cohen and King is probably in part due to their being examples of a combined syndrome.

Evidence is accumulating that these muscular disorders have an endocrine basis. The case of Thorn and Eder mentioned above ended fatally, and at autopsy not only was the glomerular layer of the adrenal cortex found

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to be let out."

C.C. Palinurus, quoted in Bull. New York Acad. Med. 24:2 (Feb.) 1948.

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to be atrophic, but there was also considerable enlargement of the thymus gland. Unfortunately this patient's response to "Prostigmin" was not tested, nor were there any studies in the creatine metabolism or the 17-ketosteroid excretion. Devic *et alii* quote Potter as finding hypertrophy of the thymus in 100% of thyreotoxic patients, and Giordano as finding this in 56%. They state that Alder was able to produce myasthenia by implants of thymic tissue, and that he was able to demonstrate abnormalities of the thymus gland in 60% of cases of *myasthenia gravis*. This latter observation has received adequate confirmation. A persistent thymus gland has been reported by Zondek is one of his cases of *coma Basedowicum* and by Laurent in one of his two cases of acute thyreotoxic bulbar palsy. Devic *et alii* state that atrophy of the adrenals has been observed in cases of thyreotoxicosis, and according to Laurent, among the drugs used by Zondek in his successful treatment of *coma Basedowicum*, adrenal cortical extract is mentioned. Thorn and Eder have presented evidence of the increased requirements of the hormones of the adrenal cortex and testes in thyreotoxicosis, and have postulated that this may lead to exhaustion and atrophy of the adrenal cortex and gonads. The effect of these hormones in controlling the involution of the thymus has been shown experimentally,[32] and their important place in muscle metabolism has been clearly demonstrated. When all these observations are considered, it is apparent that the various muscular disorders of thyreotoxicosis are related in a complex disturbance of endocrine function, and it would not be surprising if some patients showed a combination of the clinical features of two syndromes. The response to treatment suggests that the thyreotoxicosis is the initiating factor in the chain of events.

Of the pathogenesis of chronic thyreotoxic myopathy there is nothing to add to the view expressed by Thorn and Eder that disturbed creatine metabolism resulting from thyreotoxicosis and steroid hormone deficiency can cause pronounced myopathy. The seemingly paradoxical response of *myasthenia gravis* to the treatment of thyreotoxicosis is difficult to understand. The following hypothesis, unsubstantiated and put forward tentatively, is offered in explanation. Exhaustion of the adrenal cortex and gonads consequent upon thyreotoxicosis may in certain cases allow hyperplasia of the thymus, which in turn may cause *myasthenia gravis*. If it is presumed that treatment of the thyreotoxicosis allows regeneration of the adrenal cortex, such treatment might also cause involution of the thymus and remission of the symptoms of *myasthenia gravis*. However, there may be other cases in which there is hyperplasia of the thymus not resulting from thyreotoxicosis, and if the adrenal cortex responded by increased secretion rather than by atrophy (as has been shown to occur in experimental animals), the symptoms of *myasthenia gravis* and thyreotoxicosis would vary inversely in the manner described by Thorner and others. We know that this hypothesis over-simplifies the endocrine factors involved; but it may act as a basis for future investigation. Speculation on the fundamental biochemical defect in acute thyreotoxic myopathy and thyreotoxic periodic paralysis is not warranted on our present knowledge, but it is possibly significant that a low plasma potassium concentration and creatinuria have been found in family periodic paralysis,[33] and that overdosage with desoxycorticosterone in animals causes a great reduction in plasma potassium concentration.

Summary.

1. A case of chronic thyreotoxic myopathy is reported in which subtotal thyreoidectomy resulted in cure.

2. Electromyograms taken before treatment were typical of myopathy, and returned to a normal pattern two months after treatment.

3. The recent literature is briefly reviewed.

4. The pathogenesis of the muscular disorders of thyreotoxicosis is discussed in the light of our present knowledge.

Acknowledgements.

We wish to thank the Chairman of the Repatriation Commission for permission to publish this article, and Professor A. A. Abbie for allowing us to use the facilities of the Department of Anatomy, the University of Adelaide, in making the electromyographic studies. We also wish to thank Dr. Melville Chinner, visiting physician to the Repatriation General Hospital, Springbank, for his advice and encouragement in preparing this report, and to express our gratitude to the medical superintendent (Dr. A. B. Anderson) and the many other members of the staff of the hospital who helped us so considerably. We are indebted to Dr. A. R. Southwood, who obtained for us microfilm copies of articles not available in Australia from the librarian of the Royal Society of Medicine.

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CONTINUOUS POSTURAL DRAINAGE: AN ESSENTIAL PRINCIPLE IN THE TREATMENT OF DISEASES OF THE RESPIRATORY TRACT.[1]

By L. BEDFORD ELWELL,
Brisbane.

THE evolution of man's posture, as Sir Arthur Keith (1923) has indicated, through want of adequate readjustment has induced many distressing conditions which require treatment.

The late H. P. Nelson (1934), pioneer worker on bronchial anatomy, pointed out that as a secondary outcome of the assumption of the erect posture by man, many spaces of the body are so situated that gravity causes their contents to accumulate farthest from their natural outlet.

Our natural means for clearing the respiratory passages, whether tracheo-bronchial passages or paranasal sinuses, of accumulated secretions are very inadequate. Ciliary action must soon be impaired by clogging when there is excess of secretion. The postulated existence of any peristaltic action of the bronchi is very doubtful.

Coughing is the physiological method of expelling excessive secretions from the tracheo-bronchial tree; but the cough reflex has been shown by bronchoscopists to be frequently in abeyance in the presence of excessive purulent secretion in cases of long-standing bronchiectasis. A cough involving any degree of strain is apt to do far more harm than good by broadcasting pus or other infective matter throughout both lungs. This broadcasting effect is well seen on the radioscopic screen after lipiodol instillation when the patient fails to restrain a cough. A harassing cough can only be harmful. Moreover, according to Jackson (1923), the normal contraction and shortening of the bronchi on expiration become enormously exaggerated on coughing, so that the lumen may appear to close completely; this can only impede expulsive action.

Owing to the inefficient means provided by Nature of evacuating morbid secretions from the smaller and more remote bronchi, it seems reasonable to suggest that at least in many cases of severe bronchitis, and in most cases of bronchopneumonia, there remains a residuum in those bronchi in which gravity favours such accumulation; this residuum may tend to create areas of atelectasis and fibrosis, with or without bronchiectasis, and in any case with permanent lung damage which may be progressively increased by every fresh respiratory infection. The likelihood of the existence of such a progressive condition was first visualized by Riviere (1923), when he drew attention to the permanent change which may very commonly remain as a sequel to inflammation of whatever causation in the pulmonary area; the more severe and prolonged the attack, the greater the disability. Riviere suggested that most of the so-called bronchopneumonia seen in adult life, and the "basal bronchitis" strictly confined to the bronchopneumonia area, was in fact bronchiolectasis derived from a childhood bronchopneumonia, the damage of which was retained with but little immediate ill health.

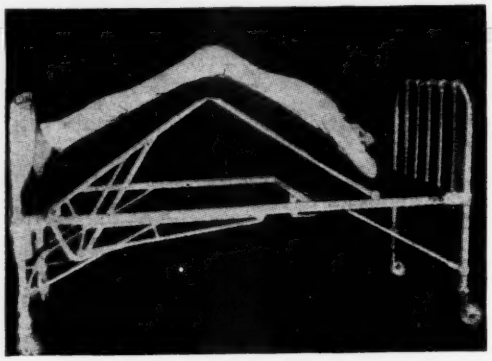

FIGURE I.
Showing patient on Nelson's postural drainage bed. (After Nelson, 1934.)

This condition is essentially a progressive infection of the respiratory tract and is well described by Davidson (1936) under the heading of "chronic pulmonary catarrh". Davidson, like Riviere, postulates the origin of most, if not all, of these cases in childhood infections.

That such a course of events may commonly occur is supported by the result of my own investigations (*vide* Table III), for among 360 cases in my own practice of persistent bronchitis, basal bronchitis, unresolved pneumonia, pulmonary fibrosis, chronic pneumonitis or bronchiectasis, which I have grouped together under the heading of chronic bronchitis (since it is suggested that all these conditions are part of the same progressive disease), no less than 348 or 96·6% of the patients gave a clear history of at least one and often repeated previous attacks of inflammatory chest disease—for example, bronchopneumonia, pleurisy, congestion of the lungs or

[1] Read at a meeting of the Section of Medicine, Australasian Medical Congress (British Medical Association), Sixth Session, Perth, August, 1948.

TABLE I.
All Patients.

Age at which Treatment Commenced. (Years.)	Number of Patients.[1]	Males.	Females.	Complete Symptomatic Relief. (+4)	Very Much Improved. (+3)	Much Improved. (+2)	Slightly Improved. (+1)	No Improvement. (0)
70 to 77	11	3	8	1	8	2	—	—
60 to 70	34	19	15	3	30	1	—	—
50 to 60	60	32	28	7	42	7	2	2
40 to 50	63	32	31	12	33	16	1	1
30 to 40	76	39	37	15	46	11	—	4
20 to 30	84	33	51	22	48	13	—	1
10 to 20	54	27	27	12	13	19	—	—
1 to 10	34	19	15	10	18	4	2	—
	416	204	212	82 (19·7%)	248 (59·6%)	73 (17·6%)	5 (1·2%)	8 (1·9%)

[1] Practically all cases were examined by X rays as a routine measure.

TABLE II.
Classification.

Class.	Number of Patients.	Progress.					Grading.		
		+4	+3	+2	+1	0	Grade IV.	Grade III.	Grade II.
Bronchitis (non-tuberculous) including: Bronchitis with asthma 72 Bronchitis with sinusitis 156	360	71	211	66	5	7	47	258	55
Bronchitis with pulmonary tuberculosis	17	3	12	2	—	—	5	6	6
Abscess of lung	2	2	—	—	—	—	2	—	—
Sinusitis only	29	5	19	5	—	—	4	12	13
Hay-fever only	1	—	1	—	—	—	1	—	—
Asthma without bronchitis	7	1	5	—	—	1	1	5	1
	416	82	248	73	5	8	60	281	75

bronchitis, and most frequently the last, a considerable proportion having experienced their earliest attack in childhood.

INTERMITTENT POSTURAL DRAINAGE.

The vertical posturing of the chest and head over the edge of a bed or table several times a day has in the past been the recognized method of postural treatment.

Such treatment is most uncomfortable, and can be of value only in clearing the trachea and larger bronchi of their accumulated secretions, as it has little effect, if any, in draining the secondary or tertiary bronchi, which are the ones affected in bronchiectasis.

CONTINUOUS POSTURAL DRAINAGE.

In a paper on the subject of continuous postural drainage, Nelson (1934) drew attention to the fact that the idea was not new, but had been described by Ewart in 1901, the patient remaining in the approved posture for hours at a time instead of minutes, as in the accepted mode of intermittent postural treatment. Nelson devised a bed (Figure I) for the treatment of patients with basal lesions in the prone position, using the same bed flat for the lateral or supine positions.

The maximum inclination obtainable with this bed was 45°, but Nelson admitted that this was too steep for most patients, and especially for adults, who he considered should be placed at an angle between 20° and 30°. At the lower end of the bed, the legs had adjustable inner tubes so that the foot of the bed could be raised eighteen inches. This would permit an inclination of not more than 15°. (My own estimate.)

Stimulated by Nelson's suggestions and their commonsense appeal, I felt that the treatment should be of value in a much wider field of medical practice even if applied in a more or less empirical fashion, as bronchography on a large scale was obviously impracticable, as well as being essential only where surgical intervention had to be considered.

Consequently, after satisfactory results had been obtained in bronchiectasis, it seemed only rational to apply the treatment in the field of the precursors of bronchiectasis, the "damaged lungs", and *a fortiori* to ascertain how much of this progressive damage could be alleviated and even prevented in its various stages.

When the treatment was applied to patients with chest conditions, it was found that concomitant catarrh or inflammation of the paranasal sinuses usually received striking benefit. This can easily be understood when we consider that the ostia of the maxillary antra, the sinuses mostly involved, are so situated as to be largely above the level of any fluid or semi-fluid contents of the sinus. Consequently, when there is any excessive secretion, a residuum, large or small, will always tend to remain in the lower part of the sinus cavity below the level of the ostium; this no doubt will tend to cause chronic irritation and mucosal thickening with increasing liability to infection or superinfection. The same consideration, I understand, applied to a certain extent in the case of the ethmoidal and sphenoidal sinuses.

If the patient lies on the sloping bed without a pillow, alternately on either cheek, with sufficient elevation of the foot of the bed to permit the head to slope downwards, drainage through the ostium from the uppermost antrum should be greatly facilitated. Naturally, if one side is affected more than the other, that side needs to be kept uppermost for the longer periods.

It is a common observation in asthma that paranasal sinusitis and/or bronchitis not uncommonly precedes or induces the asthmatic paroxysm or is a frequent complication. All but seven of my 79 cases of asthma were associated with positive bronchitis, 10 were complicated by undoubted bronchiectasis, and 32 were complicated by

TABLE III.
Chronic Bronchitis.

Number of Patients.	Age. (Years.)	Bronchiectasis Undoubted, Grade IV.	Advanced Bronchitis (Many Probably Bronchiectatic). Grade III.	Moderate Bronchitis, Grade II.	Number of Patients with Earliest Chest Lesion in Childhood or Adolescence.		No Chest Lesion Until After Twenty Years of Age.	No Previous Chest Lesion.	Duration of Treatment.				
									Twelve Months or Over.			Under Twelve Months.	
					One to 10 Years.	Ten to 20 Years.			Number of Cases.	Average. (Years.)	Longest Period. (Years.)	Number of Cases.	Average. (Months)
11	70 to 77	1	9	1	—	1	10	—	2	1·125	1·25	9	4
33	60 to 70	3	25	5	3	—	27	3	11	3·45	9·0	22	3·75
50	50 to 60	4	37	9	4	—	44	2	24	3·92	14·0	26	3·2
53	40 to 50	10	34	9	16	7	29	1	28	2·64	13·0	25	4·7
66	30 to 40	4	49	13	25	11	28	2	28	3·33	13·0	38	4·4
68	20 to 30	12	48	8	35	18	15	—	30	2·96	13·0	38	4·9
49	10 to 20	12	30	7	—	—	—	2	30	2·65	7·0	19	4·5
30	1 to 10	1	26	3	—	—	—	2	20	2·5	6·5	10	4·2
		47	258	55	83	37	153	12	173	—	—	187	—

sinusitis, seven of the last-mentioned being classed as Grade IV and associated with grossly infected antra or considerable pansinusitis. Hay fever as a precursor or concomitant of the asthmatic attack was frequent.

Therefore it seemed reasonable to anticipate that continuous postural treatment, which had already proved of such value in sinusitis and bronchitis, might be serviceable in the prevention of the asthmatic paroxysm. This was soon proved to be the case (Table IV). It can now be stated with confidence that even in long-established cases the attacks can be kept well under control with a prospect of ultimate elimination, whereas in early cases they can be entirely prevented.

Rationale of the Posture Adopted.

The main objective is to encourage the freest possible drainage of all accumulated and accumulating secretions from the affected area, whether lung or paranasal sinus. The main outlet, whether bronchus or ostium, must be dependent. If the affected areas are multiple, as they frequently are in the various grades of bronchitis including bronchiectasis, the greater part of the time may be spent in the prone or semi-prone position, as the posterior basic bronchi are usually especially involved, and part spent in the supine or partly supine and partly lateral position, when the ventral bronchi, the lingula bronchus or the middle lobe bronchi are affected.

sloping bed and especially the semi-prone position as a routine measure in most cases of pulmonary tuberculosis, as in most other chest conditions, particularly as a means of avoiding strain in coughing and promoting easy expectoration.

The posture is invariably maintained during all hæmorrhages, however severe, with nothing but benefit; it is noted that the hæmorrhage clears up much more promptly than similar hæmoptyses before postural treatment, and the dreaded liability to fresh extension of the disease through bronchial embolism is definitely lessened.

Method of Application of Treatment.

Elevation.

It has been found that a minimum elevation of the foot of the bed by eighteen inches is desirable in all chest conditions in which the lower lobes are mainly involved—that is to say, it is applicable in practically all the cases of chronic bronchitis under review. In cases of asthma a further elevation up to 24 inches may be necessary before full relief is obtained. This may be on account of the extemely tenacious character of the sputum in many instances.

For drainage of the maxillary antra 15 to 16 inches may suffice, although one patient obtained excellent results with an elevation of only 10 inches; but he had a firm bed and maintained that his head sloped downwards.

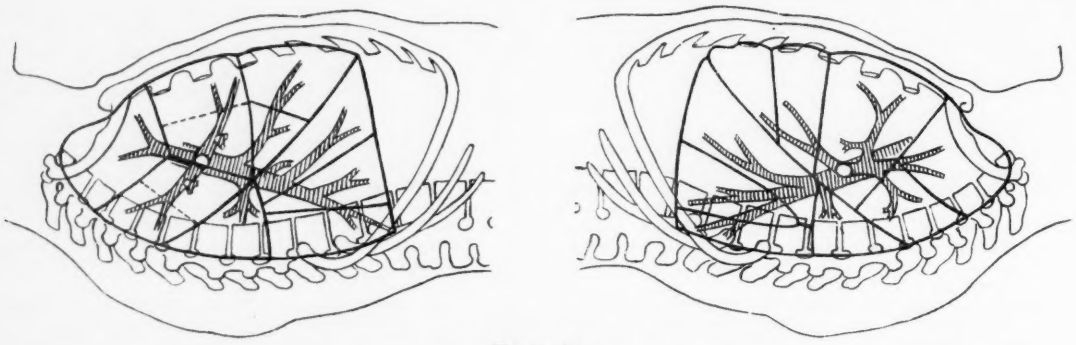

FIGURE II.

Chest diagrams to show the broncho-pulmonary segments and the bronchi supplying them. Only the lateral views are given, as so much overlapping occurs in the antero-posterior views. (After Brock, 1947.)

It is noteworthy that frequently when one tells the patient to spend most of his time in a certain posture he will say that he always avoids that position as it provokes severe cough, pain or difficult breathing. This is usually a sure sign that your advice is sound, and the patient must be encouraged to spend an increasingly long period in this particular position, taking a sedative if necessary at the beginning in order to assist him to retain the position long enough to be of value, and in this way he may be able to expectorate a quantity of phlegm that he had never been able to get rid of before and thus relieve both the cough and the difficult breathing.

The accompanying diagrams (Figure II and Figure III, (*a*) and (*b*)) designed by R. C. Brock (1947) demonstrate the course of the main branches of the bronchial tree and the area supplied or drained by them, the various segments being differentiated by the intrabronchial injection of coloured gelatin. It will be noted (Figure II) that even when the thorax lies horizontally, fair drainage of the commonly affected segments can occur; thus only a slight inclination may prove adequate and often does in practice.

The drainage of cavities in pulmonary tuberculosis deserves especial mention. Salkin, Cadden and McIndoe (1936) found that only a small number of all such cavities had dependent drainage, and that most efferent bronchi arose from the upper parts of the cavity wall; they therefore stressed the importance of change of position and the need of postural drainage in order to place the draining bronchus in a dependent site, particularly for cavities showing a fluid level. I have for many years adopted the

His right antrum had been known to be totally opaque radiologically for two years and reported as evidently containing pus and diseased mucosa. In the left antrum, right frontal sinus and right ethmoid sinuses slight mucosal thickening was apparent. He maintained his position for only ten months, and has now remained perfectly well for five years without it. However, in all such cases I always advise that the posture be maintained permanently.

The Pillow.

It is always far better to manage without a pillow under the head, however low, and it is remarkable how many of these patients have been comfortable without one despite sleeping on a fibre mattress; 90% of the asthma patients dispensed with a pillow.

The main disadvantage of a pillow is that it tends to slip under the shoulders and interfere with the adequate slope of the thorax, as well as interfering with the adequate slope of the head when the sinuses are affected. It should never be used for children, and they can manage perfectly well without it. If there is any tendency for the patient to slide downwards, a firm bolster or pillow will be required between the top of the head and the end of the bed to act as a buffer. A soft pillow should not be used for this, as it tends to slip under the head.

The Bed.

The most important factor of all is the avoidance of sagging—the mattress must be firm and tight. Most patients used tight wires and a firm mattress such as

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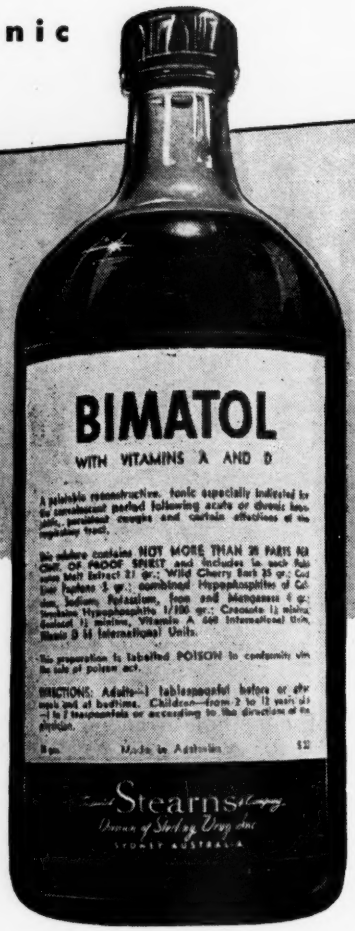

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fibre or tight kapok. Wire springs if used need to be kept extra tight by necessary adjustment from time to time. Slats are satisfactory. If there is any tendency for the mattress to slip, it must be secured by tying or some other method to the foot of the bed, otherwise the mattress will curl up at the head of the bed and prevent any satisfactory posturing.

The posturing of young children is a problem in itself, but a firm and watchful parent will usually succeed in training them to remain up and down the bed or cot and not across it. My colleague, Dr. P. A. Earnshaw, suspends his child patients by the feet from the lower rail of the foot of the cot by means of tapes and sandshoes, a valuable procedure for refractory subjects.

Assessment of Results.

The large majority of patients have not felt it necessary to seek any further advice after the initial consultation, and they have been satisfied to use their own judgement or suit their domestic convenience as to how long they maintained the treatment and also as to the precise manner of carrying it out—factors that have inevitably militated against achieving the best results. Consequently I had no progress record of these patients until they returned the recent *questionnaire*. Owing to frequent changes of address during war years, several hundred *questionnaires* were returned unclaimed, but sufficient progress reports are available to give a fair cross-section assessment. A number of girls and young women, even with advanced bronchiectasis, have married and have omitted treatment for years until forced to begin it again through increasing renewal of their disability.

When there is much irreversible lung damage, as there was in most of the cases under review, I always stress the need for maintaining treatment indefinitely whatever happens.

Both in the grading and in the assessment of results I have endeavoured to be as conservative as possible. For instance, the 47 cases of bronchiectasis (Grade IV) represent only the cases in which the X-ray evidence, whether bronchographic or on a flat film, is confirmatory of the clinical indications. The actual number of patients with some degree of bronchiectasis without positive evidence must be far greater. For instance, patients with considerable hæmoptysis and a strongly suggestive clinical history, but without any suggestive X-ray evidence, have been classed as Grade III.

Not all patients with bronchiectasis show clubbing of the nails; but when they do, it has been interesting to see a pronounced lessening of the degree of clubbing follow adequate postural therapy, and in some cases its complete elimination.

The few cases of tuberculosis included are those in which the bronchitis or bronchiectasis was the main factor, and in most of which the pulmonary tuberculosis had been arrested.

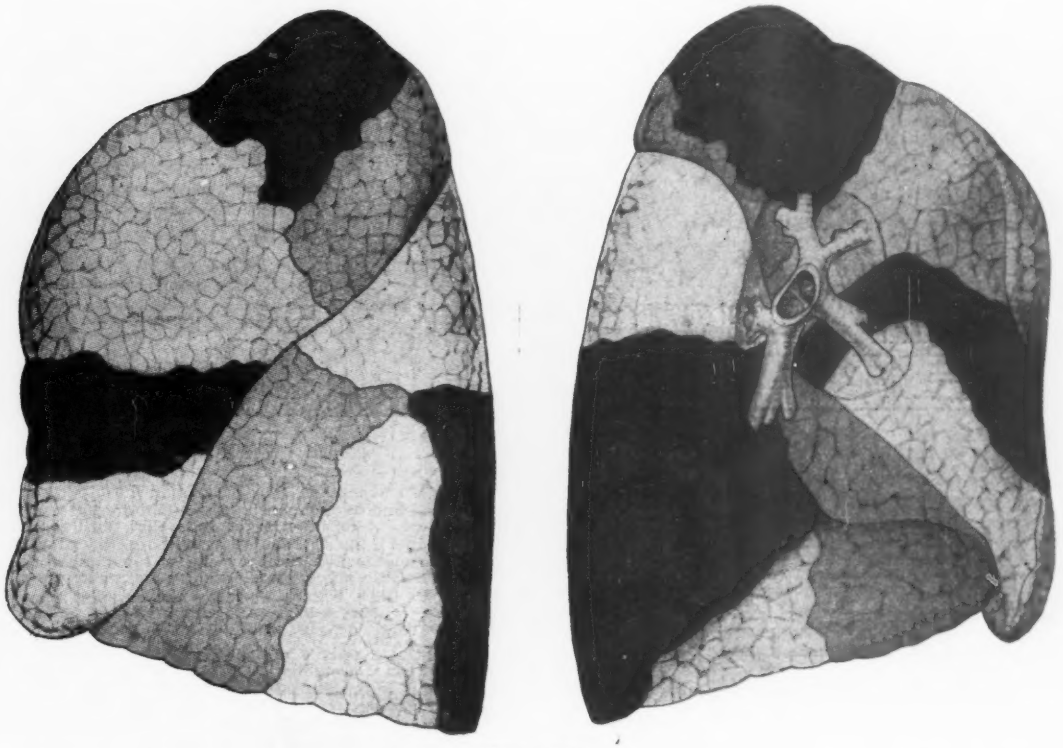

FIGURE III.

(*a*) Lateral view of the left lung, in which the individual segments have been injected with coloured gelatin. (*b*) Medial view of the left lung, in which the individual segments have been injected with coloured gelatin. (After Brock, 1947.)

Only one case of hay fever is shown in the table; but hay fever has been a frequent precursor or concomitant in all the asthma cases, as well as in a number of sinusitis and bronchitis cases independent of asthma. In most instances the hay fever has decreased *pari passu* with the asthma or other relevant condition.

The two patients with lung abscess were both examined in consultation after some weeks of unremitting fever and considerable constitutional weakness, one abscess being subapical with a fluid level and the other in the middle lobe. Both patients responded most promptly to suitable posturing.

There have been a number of cases of early pulmonary heart failure which I have not tabulated, including several associated with double rheumatic valvular lesions and others with a history of angina on exertion. Pulmonary

fibrosis, emphysema, bronchiectasis or silicosis had brought about the strain on the right side of the heart. In all these cases there was considerable relief in the shortness of breath on exertion and considerable improvement in the general health as a result of postural treatment, often enabling the patient to resume some occupation at least temporarily. Patients suffering from hypertension and enlarged hearts, if they have bronchitis as well, are benefited unless left ventricular failure is already present.

TABLE IVA.
Asthma.

Progress.	Number of Patients.[1]	Male.	Female.	Grade.[2]		
				IV.	III.	II.
Complete symptomatic relief (+4) ..	7	6	1	2	4	1
Very much improvement (+3) ..	52	19	33	22	22	8
Much improvement (+2)	15	6	9	4	11	—
Slight improvement (+1)	3	2	1	2	1	—
No improvement (0)	2	2	—	—	2	—
	79	35	44	30	40	9

[1] All but seven patients had positive evidence of bronchitis. There were 10 cases of undoubted bronchiectasis, and 32 of sinusitis, in seven of Grade IV. In only six cases was neither bronchitis nor sinusitis noted; these patients have responded equally well to treatment.
[2] Grade II, attacks moderate but not severe; Grade III, attacks severe but intermittent; Grade IV, attacks severe and practically continuous.

TABLE IVB.
Duration of Asthma Prior to Treatment.

Period.	Number of Cases.
Under one year	12
One to ten years	42
Ten to twenty years	15
Twenty to forty years	6
Forty to forty-three years	4

TABLE IVC.
Duration of Treatment.

Period.	Number of Cases.
Under one year	37
One to three years	28
Three to twelve years	14

REPORTS OF CASES.

Space will permit only a few brief case records, which may indicate the type of response usually met with.

CASE 402.—A male patient, aged ten years, was first examined on May 8, 1947. He had had pneumonia at the age of seven months and asthma two years later. Recurrences had taken place at intervals of weeks or months ever since; the attacks were becoming more frequent and prolonged. He coughed a lot and brought up large quantities of thick, yellow-green phlegm, with great relief; he vomited at times. His nose had been cauterized eighteen months earlier, with slight temporary relief.

On examination of the patient, cervical lymph glands were much enlarged. He had a pasty skin and his chest was somewhat barrel-shaped, with restricted expansion. Generalized rhonchi were present, and slight dulness over the lower lobe of the right lung was noted. X-ray examination of the sinuses revealed polypoid mucosal thickening on the floor of both antra. The lung fields were reported as clear.

This young patient is still maintaining posture at eighteen inches, lying semi-prone on either side; he uses no pillow and a fibre mattress with tight wire. For many months he has been able to play all sports normally and has vastly improved in health. The attacks have practically disappeared.

CASE 48.—A male patient, aged fifty-eight years, was first examined on February 22, 1947, complaining of pleuritic pain present since an attack of pleurisy in 1929 and pneumonia in 1930; he had had dyspnœa on exertion, wheezing, tightness, and a troublesome cough ever since, much worse recently. He was very subject to colds.

On examination of the patient, his arteries were sclerotic and tortuous. No abnormality was detected in his heart, his chest appeared emphysematous and râles were heard at his lung bases.

This patient is still posturing at an elevation of eighteen inches without a pillow (Figure IV). He has no trouble with cough and is free from colds. He feels a different man. He has no wheezing or tightness or nocturnal orthopnœa as before. His "wind" has greatly improved.

CASE 65.—A female patient, aged thirty-five years, was first examined on August 12, 1943. Asthma had been continuous and severe for five days; it had begun five months earlier and had been preceded by a severe cough present for the previous two months. She had had long-standing sinus trouble, which was by then severe pansinusitis. A double radical antral operation had been performed in 1938 and a second operation four months prior to examination without any relief of the sinus trouble.

FIGURE IV.

This patient needed two periods in hospital, one of six weeks and one of one month. She maintained the posture for three years. She did not get full relief until the elevation was up to 21 inches; she went without the posture treatment for eighteen months as she was symptom free, then became a little wheezy and decided to renew the postural drainage. (See Figure V; note the sagging of the fibre mattress, which reduces the angle of the slope.) Her sinuses are giving no trouble at all—a vast improvement.

CASE 141.—A female patient, aged twelve years, was first examined on December 19, 1946. Her sister, aged twenty years, had recently died from bronchiectasis. The patient had had asthma for three years and hay fever for six and a half years. The attacks were unrelated to colds; they had become progressively more severe, and now lasted four or five days and were accompanied by severe abdominal pain. Cough was severe and frequent, inducing vomiting. Attacks recurred every two to three weeks. The patient was hardly free from hay fever for a day.

X-ray examination revealed the appearances of possible allergic sinusitis, chronic bronchitic changes and possible bronchiectasis at the base of the right lung.

This patient is still posturing at an elevation of 24 inches (Figure VI). Her parents report a vast improvement; only two mild attacks have occurred during the period of treatment.

COMMENT.

The few patients who had been only a few weeks under treatment and were progressing most satisfactorily in their latest report have been graded in their progress as "+2", although they show every likelihood of reaching a higher grade.

The outstanding proportion showing very much or great improvement is noteworthy, such progress often being described by the chronic sufferer over many years, perhaps a lifetime, as "marvellous" or "unbelievable".

These results are especially remarkable when it is considered that most patients have not sought further

advice with regard to their treatment after the initial instruction, although always counselled to do so. Consequently their method of application has too often been relatively inadequate, or treatment has been omitted prematurely. They inevitably fail to realize that with all acute exacerbations, or whenever they are not responding sufficiently, the indications are clear for posturing longer, and usually all day as well as all night until they are well relieved. This may be necessary for a period, and is always desirable during the initial treatment in all severe cases, especially for asthmatics; in fact, if the postural drainage is of value one can never have too much of it. It is remarkable how comfortable most patients can be. Lack of comfort or indifferent results usually indicate faulty application.

Surgical intervention—for example, removal of polypi—may be needed to permit of free drainage, but it is noteworthy that most polypoid masses in the antra will shrink with adequate drainage therapy.

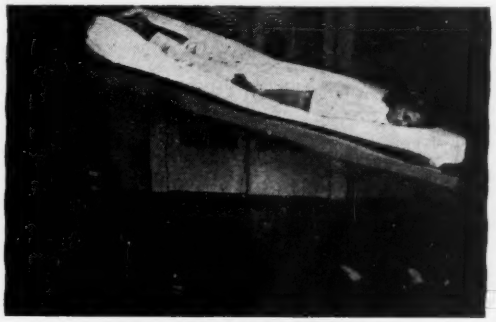

FIGURE V.

Although postural drainage should obviously follow most operations on sinuses or chest, if it is consistently applied in the beginning much radical surgery might be avoided.

Records of treatment of initial pulmonary lesions are not presented, as these would have little value without comparison with equivalent controls; but such lesions have invariably cleared up much more promptly than would be expected normally and have not shown any tendency to recur over years.

CONCLUSIONS.

It is suggested that in most cases recurrent inflammatory diseases of the lungs, grouped for the purposes of this record under the term of chronic bronchitis, which progress largely by acute exacerbations, are usually brought about by intercurrent infections, due to a progressive inflammatory condition originating in the incomplete resolution of an initial acute pulmonary lesion, whether bronchitis, pneumonitis or bronchopneumonia.

This original lesion frequently occurs in early childhood or infancy, but it may occur not uncommonly in later childhood or adolescence, or with a diminishing frequency of incidence, at any period during the rest of life.

In many cases recovery from this lesion may appear complete and no ill health may ensue until this permanent lung damage is aggravated by a fresh infection of adequate severity at some later period in life.

It is suggested that the main cause of this lesion is the persistence of a residuum of accumulated secretions brought about by physical difficulties in effecting their adequate evacuation. It is also suggested that such a pathogenesis applies equally well to most inflammatory diseases of the paranasal sinuses.

If therapeutic measures to assist the evacuation of these secretions by continuous postural treatment, adequately applied, are utilized in dealing with the initial acute phases of respiratory infections, not only will a satisfactory recovery be expedited, but the genesis of the progressive inflammatory disease herein described may be largely inhibited. However, should the condition progress and become chronic, for want of any such adequate treatment or from other causes, immense benefit may still accrue from perseverance with the treatment at any stage. Treatment may even lead to a virtual arrest of the disease and in freedom from symptoms in relatively advanced cases, such as those of generalized pulmonary fibrosis with emphysema and incipient pulmonary heart failure.

For reasons already stated the results here tabulated, though excellent, could obviously be improved still further if the treatment was adequately applied in most cases. This can be achieved only if the family doctor obtains a thorough grasp of the main principles and consistently supervises their application in the patient's home. Once there is full recognition of the need for the adoption of continuous postural drainage as an essential principle in the treatment of all diseases of the respiratory tract, including asthma and hay fever, full recovery from acute infections will be greatly facilitated, and the progressive development of the grave chronic disabilities which are all too prevalent should be largely preventible.

FIGURE VI.

ACKNOWLEDGEMENTS.

My thanks are due to the editor of the *British Medical Journal* and to Mr. R. C. Brock for permission to use their diagrams.

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Reports of Cases.

A DOUBLE RESECTION OF THE LARGE BOWEL FOR MALIGNANT DISEASE.

By GEOFFREY NEWMAN-MORRIS, M.B., M.S., F.R.C.S., F.R.A.C.S.,
Melbourne.

Clinical Record.

A PROFESSIONAL man aged sixty-six years, was admitted to Prince Henry's Hospital on December 29, 1947. The only relevant past history was that of an attack of acute catarrhal jaundice eighteen months previously. For the six months before his admission to hospital he had noticed constant pain in the left iliac fossa, with intermittent

colicky pain in that area. He also gave a history of alternating constipation and diarrhœa, and of nausea but no vomiting. Two stone in weight had been lost over the past six monhts.

On examination, the patient was found to be considerably emaciated; a sausage-shaped mass was palpable in the subcostal area, and fullness in the left iliac fossa. The hæmoglobin value was 69%. A provisional diagnosis of chronic intussusception of the transverse colon due to malignant disease had been made, and this was confirmed by an X-ray examination after a barium meal and enema, carried out by Dr. Alan J. G. Mackay, whose report is as follows:

No evidence of any infiltration involving the stomach could be detected. The gastric emptying rate was normal and there was no delay in the small bowel. At 24 hours the caecum, ascending colon, and lower descending and pelvic segments were partially outlined and at 48 hours the distribution of barium in the colon was much the same. However, at 48 hours there was also an irregular pattern in the proximal portion of the transverse segment, partially outlined by gas and barium.

Clysma.—Immediately after the 48 hour examination a bowel washout was given, but this was almost immediately returned by the patient and barium remained in the ascending and pelvic segments. The barium emulsion flowed up the descending segment as far as the level of the iliac crest to a ring-like constriction and then the patient complained of considerable discomfort. The remainder of the examination was carried on under great difficulty, as the patient complained of considerable pain and expelled large quantities of the enema. However, pathological changes were demonstrated, particularly after evacuation, as follows:

1. Considerable irregularity and dilatation of the proximal portion of the transverse colon, apparently due to an infiltrating mass and a partial intussusception. (This apparently corresponds, in part, to the palpable mass in the abdomen.)
2. A ring constriction of the descending segment near the level of the iliac crest, presumably due to carcinoma.

Pre-operative treatment included the administration of succinyl sulphathiazole, two grammes every four hours for four days, penicillin given intramuscularly, a blood transfusion and a non-residual diet.

Operation was carried out on January 2, 1948, under anæsthesia with "Pentothal" and cyclopropane and with the use of curare. A right paramedian incision was made and the abdomen was explored. An intussusception was found in the right side of the transverse colon and reduced, and a small tumour was felt at the apex. A ring constriction in the lower part of the descending colon was also felt.

It was decided that a resection of the large bowel to include both these tumours would not be possible, because of the difficulty in anastomosing the sigmoid colon to the region of the hepatic flexure, and two separate resections were carried out. A large part of the transverse colon was resected and a primary end-to-end anastomosis of the right and left ends of this part of the bowel was carried out. The descending colon was then freed, and about six to eight inches of it were excised. A primary end-to-end anastomosis of the descending colon was carried out. For both anastomoses clamps were used, and two layers of continuous chromicized catgut sutures on curved atraumatic needles were inserted.

Convalescence was smooth. The patient was apyrexial, and the bowels were opened normally on January 5, seventy-two hours after the operation, and opened naturally every day whilst the patient was in hospital. He was discovered up and shaving himself in the bathroom four days after the operation, and was discharged from hospital to a convalescent hospital on January 13.

The pathologist's report was as follows:

Macroscopic: There are two segments of bowel, one about 15 cm. long, portion of which is occupied by a fungating and constricting growth encircling the bowel 4 cm. in length. There do not appear to be any glands in the mesentery. The other portion 10 cm. long has a fungating tumour 4 cm. in diameter, not completely encircling the bowel.

Microscopic: Section through the carcinoma in the sigmoid region shows grossly irregular tubules lying in a fibrous stroma, which invade the sub-mucosa and push down towards and into the muscle coat. The surface is ulcerated. There is a good deal of inflammation present. Section through the polyp in the transverse colon shows again irregular tubules, but with slightly better differentiation of the cells. There is a definite bulge of the polyp towards the submucosa, but the muscle coat is not invaded.

Adeno-carcinoma of sigmoid and transverse colon.

The patient has been examined at regular intervals up till the present time, and has gained in weight; there are no abnormal bowel symptoms.

Comment.

The case is reported to illustrate the smooth post-operative course which is to be expected with the use of succinyl sulphathiazole or phthalyl sulphathiazole in cases of large bowel resection with primary anastomosis.

It is also worthy of note that, because of excellent relaxation during anæsthesia, a tumour in the lower part of the left side of the colon was removed with ease through a right upper paramedian incision.

FIBROMA OF THE OVARY WITH ASCITES.

By PHILIP C. THOMAS, M.R.C.O.G.,
Perth.

FIBROMA of the ovary is a relatively uncommon tumour, the incidence being variously given as from 1% to 2% of all ovarian tumours. It is thought therefore that the report of this case may be of interest.

Clinical Record.

Mrs. S.M.D., aged twenty-eight years, had one child, aged five years, and in July, 1948, miscarried when twenty weeks pregnant. Pelvic examination at that time revealed a solid mobile tumour in the left fornix. Laparotomy was performed on September 8, 1948, and revealed a solid tumour about two inches in diameter arising by a thick pedicle from the lower pole of the left ovary. There was an appreciable amount of free fluid in the abdomen, probably between two and three pints. The right ovary was adherent in the pouch of Douglas and was mobilized and elevated by plication of the ovarian ligament. The tumour and the remainder of the left ovary were removed.

Description of the Specimen.

The tumour was solid and measured 5·2 by 4·5 centimetres and was 3·0 centimetres thick. The cut surface was yellowish and homogeneous, and examination showed no areas of degeneration, cyst formation or hæmorrhage. The atrophic ovary was attached by a thick pedicle to the tumour. Microscopic examination showed the tumour to consist of connective and fibrous tissue, the latter being the cellular element and showing the numerous different shapes and types of fibroblasts. No epithelial elements could be identified, and therefore, in the absence of these, the tumour must be diagnosed as an ovarian fibroma.

Comment.

An interesting and most important feature of these tumours is the presence of Meigs's syndrome—that is, the association of fibromata, and sometimes other tumours, with ascites and hydrothorax. No satisfactory explanations have been given for the causes of the ascites or the hydrothorax, but J. V. Meigs made a significant contribution when he focused attention on the existence of this syndrome in association with benign lesions, as prior to this many such patients had been regarded as suffering from inoperable malignant disease.

Acknowledgements.

I am indebted to Dr. V. A. Fergusson Stewart of Perth and to Dr. H. F. Bettinger of Melbourne for their reports on the tumour.

Reviews.

PATHOLOGY.

CONTRIBUTIONS from thirty-two collaborators are contained in "Pathology", edited by W. A. D. Anderson.[1] These writers are all recognized authorities in their own subjects in the United States of America. Some of the writers have the gift for lucid explanation more highly developed than others. In some of the chapters the author has obviously had difficulty in compressing his subject into the space allotted to him. Professor Anderson states in the preface that the book is intended for medical students and "the practising or graduate physician". Some of the contributors have written their section with this in mind, others have gone into sufficient detail to make their sections a useful reference for the practising pathologist. Nevertheless, in spite of this patchiness which is inevitable in this many-authored form of compilation, the book should prove useful to anyone who wants the whole field of morbid anatomy covered in a single volume.

The whole field has been covered including the organs of special sense, skin, bacterial diseases, protozoal and helminthic diseases and there is a useful chapter on the effects of radiation. This last gives a few pages on atomic bomb injuries. The information is accurate and, considering the lag now-a-days between manuscript and publication, remarkably up to date. The illustrations, besides being profuse, are of a high technical order. It is a pity more care has not been taken to ensure uniformity in the legends for the illustrations. Many would be much more useful if a little more explanation was given as to what they show. Trained pathologists can readily recognize the stains and magnification used to obtain the picture, but students should be told at least whether it is a high or low power view even if the exact degree of magnification is not given. This book will need a lot of polishing and trimming in future editions if it is to gain popularity at the expense of its already well-established competitors in this field.

GLOMERULAR NEPHRITIS.

IN his monograph Dr. Thomas Addis presents a thoughful account of the diagnosis and treatment of glomerular nephritis in its four stages, namely, acute, latent, degenerative and chronic.[2] The book is so full of experimental and clinical observations that only a few can be discussed.

In the early chapters, the various methods of clinical examination of the patient are set out, with particular reference to collection and examination of blood and urine samples. Although the author states that these tests are carried out in the office or surgery, the blood tests especially are still somewhat complicated for the average busy doctor, and are better left to the pathologist. The author states very truly, however, that for a correct understanding of disease, all tests should be supervised by a single observer who at the same time is studying the disease in the affected patient.

The description of the various casts—hyaline, epithelial, blood and pigment—is invaluable, especially in relation to the various stages of the disease.

In inferring the extent of any renal lesion, Dr. Addis has drawn extensively from experiments on rats, from which he removed varying amounts of renal tissue, giving the surviving members a diet containing standard amounts of protein, and he shows how the work of the kidney is increased by increasing concentrations of protein in the diet.

In human sufferers from nephritis, he finds that the extent of the renal lesion can best be determined by the concentration of creatinine in the serum or by a creatinine clearance test. These problems are discussed very fully before the main subject matter of the book is reached, that is, the differentiation of glomerular nephritis from other diseases, and the diagnosis of glomerular nephritis in its various phases, and its treatment. A fund of information is present in every page.

The form of nephritis described by Ellis, of the London Hospital School, is mentioned, but the author's views on ætiology and prognosis differ from those of Ellis, and he confirms his views by short case histories.

In the discussion on treatment, the importance of work done by the kidney in excreting urea is stressed, and the higher the protein intake the more work the kidney has to do.

In a diseased kidney, owing to damage to the nephrons and to the blood supply, tissue hypertrophy cannot keep pace with the extra demand for work and the remaining nephrons are called upon to do more osmotic work. Once again, the author refers to animal experiments in order to draw comparisons. The so-called "Masugi" nephritis is a disease of animals resembling glomerular nephritis in man. Rats suffering from this disease, when kept on low and high protein diets respectively, suffer a different fate, the former improving and the latter dying of uræmia.

In all stages of nephritis a minimum intake of protein is advocated, and this applies equally to the degenerative stage in which the plasma protein content is low and the protein content of the urine is high. The author claims that good results obtained during the degenerative stage with diets rich in protein are due to the fact that the subjects were suffering from protein starvation, and he considers that prolonged use of this diet may eventually hasten the terminal phase of the disease.

An appendix at the end of the book shows different foods with their respective protein contents, and from this it is easy to prepare a diet suitable for any nephritic.

This is a book well worth careful reading by student, practitioner and specialist, as it contains the fruits of accumulated knowledge and wisdom of one who has spent many years in the study of the disease.

A MANUAL OF PRACTICAL OBSTETRICS.

IN the second edition (1948) of his "Manual of Practical Obstetrics" O'Donel Browne has presented in a most readable form the practical teaching of obstetrics intended primarily for his students and for the general practitioner.

Multum in parvo would be a brief description of this attractive little manual which in 250 pages covers the subjects of pregnancy, labour and the puerperium in their normal and abnormal aspects. As Master of the Rotunda Hospital, Dublin, the author reflects the tradition of this famous 200-year-old institution in his references to previous Masters, thus making his work really a Rotunda Hospital text-book.

Concentrating on the practical side of obstetrics, Browne avoids most of the theory and controversial points and thus provides a clear guide to treatments which have been "thoroughly tested". The echo of practical experience rings throughout the whole work. With his statement that in some instances the treatments "differ from beliefs elsewhere" we are in agreement. Such instances are "curtailment of protein" in toxæmias of pregnancy, the "perineal repair while awaiting the separation of the placenta", the "application of forceps to the breech".

The prominence given to the conduct of labour in the private house makes interesting reading to practitioners in Australia where domiciliary obstetrics forms a very small part of practice. It is interesting also to note that the mother is to decide the mode of feeding of her baby and that the author favours early rising (after forty-eight hours).

The non-interference with the occipito-posterior presentation is to be commended; it reflects the view of a former Master (Bethel Solomons), who once wrote: "The occipito-posterior is the bane of the practitioner outside Ireland!", claiming the explanation as Irish "patience which ought to be practised also in other countries".

The advice given on the management of inertia, forceps delivery, ante-partum hæmorrhage and trial labour is particularly good. His description of trial labour—one of the most difficult subjects to define in obstetrics—is partly a tribute to a former Master (FitzGibbon) and one of the best descriptions we have read.

The chapter on eclampsia makes an interesting study. An extensive account is given of Tweedy's treatment, including starvation, purging and colonic lavage with a brief description at the end of the chapter of the treatment at present used in the Rotunda; in this treatment the use of magnesium

[1] "Pathology", edited by W. A. D. Anderson, M.A., M.D., F.A.C.P.; 1948. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 10" × 6¾"; pp. 1472, with 1183 illustrations, some of them coloured. Price: £5 12s. 6d.

[2] "Glomerular Nephritis: Diagnosis and Treatment", by Thomas Addis, M.D., F.R.C.P. (Edin.); 1948. New York: The Macmillan Company. 9" × 6", pp. 362, with illustrations. Price: $8.00.

[1] "A Manual of Practical Obstetrics", by O'Donel Browne, M.B., M.A.O., M.A., Litt.D., F.R.C.P.I., F.R.C.O.G.; Second Edition; 1948. Bristol: John Wright and Sons, Limited. London: Simpkin Marshall (1941), Limited. 8¾" × 5¾", pp. 676, with illustrations. Price: 35s.

sulphate and of hypertonic glucose solution intravenously is mentioned. "If the acute stage has not been passed within 8 to 24 hours", he states, "Cæsarean section is usually performed."

It is interesting to observe that Browne does not make the usual distinction between "retraction ring" and "contraction ring", referring to the latter as "contraction in the retraction ring". In the forceps operation he tells us that the Neville Barnes instrument is used almost universally throughout Ireland. Lower segment Cæsarean section features prominently, Browne preferring the transverse semi-elliptical incision of the uterus.

There is a good chapter on radiology by McDonogh. We would doubt, however, from our local experience the accuracy of cephalometry in the estimation of disproportion. Differences of belief, however, do not diminish the large amount of sound practical help which the book furnishes.

O'Donel Browne has provided a notable and practical contribution not only to the library of the student and the general practitioner but equally to that of the specialist.

EXAMINATION OF THE NERVOUS SYSTEM.

ALTHOUGH the ninth edition of Professor Monrad-Krohn's "Clinical Examination of the Nervous System" contains some eighty pages more than its predecessor, wider spacing, alterations here and there in paragraphing and the numbering of the illustrated pages are mainly responsible for the larger size. Additions include a few pages on electro-encephalography and slight elaborations to the section on vibration sense where the use of tuning forks with a wide range of frequencies is advocated, and also to the section on simulation. Much information which continues to be presented in footnotes might well now be incorporated with the text. It is doubtful whether the application of the Binet-Simon intelligence scale can be learned adequately from a condensed description.

The work is a mine of information concerning special tests and procedures which may be used in the examination of the nervous system. As the author points out in the preface, in attempting to make an early diagnosis the neurologist needs to have at his command a wide range of methods supplementary to the ordinary clinical examination. A diagram of cortical localization according to Brodmann's numerical description might well be added. Those who are making a specialty of neurology can hardly afford to dispense with this work, while others will find it of great use for reference.

A HANDBOOK ON SURGERY.

PART III of "A Short Practice of Surgery" by Hamilton Bailey and R. J. McNeill Love has just been published.[2] As always, the clarity of the presentation is the most striking feature of the book. There are, however, at least two serious criticisms of this part. It is depressing to find in a British text-book and particularly in one which has been described as the students' "bible", the teaching that, in the treatment of indirect inguinal hernia, herniotomy is successful only in young children and that, thereafter, huge operations such as Bassini's, the filigree, hernioplasty with fascia *et cetera* are necessary. It is interesting to speculate as to the size of the crop of direct herniæ that will result from this teaching. It is suggested that before the next edition is published a thorough study is made of Ogilvie's article on hernia in Maingot's "Post-Graduate Surgery".

The next criticism has to do with the statement in regard to the X-ray treatment of skin cancers. On page 623 this paragraph appears: "X-rays also yield satisfactory results, but this method is generally reserved for cases in which bone or cartilage is invaded, as the rays penetrate to a greater depth than radium." It is suggested that the paragraph should read: "X rays also yield satisfactory results. With few exceptions, if bone or cartilage is invaded, the treatment should be surgical from the outset."

There is one other minor criticism. On page 600, in reference to an undescended testis, the author states that at times the testis may be pulled into the inquinal canal. This statement, however, is qualified by a quotation from Denis Browne to the effect that the retraction takes place not into the inguinal canal, but into the superficial inguinal pouch. Surely there is now enough evidence to prove that Denis Browne is correct.

[1] "The Clinical Examination of the Nervous System", by G. H. Monrad-Krohn, M.D., F.R.C.P.; Ninth Edition; 1948. London: H. K. Lewis and Company, Limited. 7¼" × 4½", pp. 484, with 131 illustrations. Price: 16s.

[2] "A Short Practice of Surgery", by Hamilton Bailey, F.R.C.S. (England), F.A.C.S., F.I.C.S., F.R.S.E., and R. J. McNeill Love, M.S. (London), F.R.C.S. (England), F.A.C.S., F.I.C.S.; Eighth Edition; Part III; 1948. London: H. K. Lewis and Company, Limited. 8½" × 5½", pp. 224, with illustrations, some of them coloured. Price: £2 12s. 6d. the set. Not sold separately.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"The Pharmacologic Principles of Medical Practice: A Textbook on Pharmacology and Therapeutics for Medical Students, Physicians, and the Members of the Professions Allied to Medicine", by John C. Krantz, junior, and C. Jelleff Carr; 1949. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 9" × 5", pp. 900, with 94 illustrations, some of them coloured. Price: 75s.

Presenting the "pharmacodynamic and pharmacotherapeutic actions of drugs as they are used in the treatment and cure of disease".

"Observations on the Pathology of Hydrocephalus", by Dorothy S. Russell; Privy Council, Medical Research Council, Special Report Series, Number 265; 1949. London: His Majesty's Stationery Office. 9½" × 5½", pp. 144, with 90 illustrations. Price: 6s.

An expansion of three lectures delivered at the Nuffield Institute for Medical Research, Oxford, in 1942.

"Physician Extraordinary", by Shirley Murrell; 1949. London: Hodder and Stoughton, Limited. 8" × 5", pp. 322. Price: 11s.

A novel written round the life of Gilbert Blane, 1749 to 1834.

"Case Studies in the Psychopathology of Crime: A Reference Source for Research in Criminal Material", by Ben Karpman, M.D.; Volume III, Cases 10-13; Volume IV, Cases 14-17; 1948. Washington: Medical Science Press. 10¾" × 8¼", Volume III, pp. 878; Volume IV, pp. 918.

Each volume contains four full case studies.

"Neoplasms of Bone and Related Conditions: Their Etiology, Pathogenesis, Diagnosis, and Treatment", by Bradley L. Coley, M.D.; 1949. New York: Paul B. Hoeber, Incorporated. 9¾" × 6¾", pp. 788, with 622 illustrations. Price: $17.50.

Deals with every aspect of bone tumour.

"L'adenomectomie Prostatique Retro-Pubienne", by R. Couvelaire; 1948. Paris: Editions Bernard Baschet. Sydney: W. S. Matsdorf. 10" × 8½", pp. 106, with many illustrations.

Deals with Millin's retropubic prostatectomy.

"Incompatibility in Prescriptions and How to Avoid it with a Dictionary of Incompatibilities", by Thomas Stephenson, D.Sc., Ph.C., F.R.S.E.; revised by James Burnet, M.A., LL.B. (London), M.D., F.R.C.P.E.; Fifth Edition; 1949. Edinburgh: "The Prescriber" Publishers, Limited. 8" × 5¼", pp. 76. Price: 10s.

A practical handbook.

"Tuberculosis in History: From the 17th Century to our own Times", by Professor S. Lyle Cummins, C.B., C.M.G., LL.D., M.D., with an introduction by Sir Arthur Salusbury MacNalty, K.C.B., M.D., F.R.C.P., F.R.C.S.; 1949. London: Baillière, Tindall and Cox. 8½" × 5¼", pp. 225, with 12 illustrations. Price: 21s.

Tells the stories of some of the older workers on tuberculosis.

"The Law and Procedure at Meetings in Australia and New Zealand: A Concise Guide to Assist Persons Taking Part in or who may be Called upon to Advise in Connexion with Meetings", by Percy Ernest Joske, K.C., M.A., LL.M.; Second Edition; 1949. Sydney, Melbourne and Brisbane: The Law Book Company of Australasia, Proprietary, Limited. 7" × 4½", pp. 209. Price: 12s. 6d.

A carefully documented statement.

"Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death: Sixth Revision of the International Lists of Diseases and Causes of Death, Adopted 1948"; Volume I; 1948. Geneva: World Health Organization. 9¼" × 6¼", pp. 877.

The purpose of the work is to secure such uniformity in morbidity and mortality statistics as can be achieved.

The Medical Journal of Australia

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UROPEPSIN EXCRETION BY MAN AND ITS SIGNIFICANCE.

WHEN a procedure is devised for the diagnostic purposes of clinical medicine several provisos have to be borne in mind. In the first place the basis of the procedure should be scientifically sound; otherwise no reliable conclusions can be drawn from the results of its application. Secondly, it should not be difficult to apply; the simpler it is, the more widely will it be used. Thirdly, its use should entail no risk to the patient, and to this may be added the avoidance of unpleasantness. Every application of a laboratory test to a patient is in the nature of an experiment. These statements will serve as an introduction to three studies which have been recently reported from the May Institute for Medical Research, The Jewish Hospital, and the Departments of Medicine and Psychiatry, University of Cincinnati College of Medicine.[1] The workers concerned in these studies, though their names are not all associated with every study, are A. Mirsky, S. Block, S. Osher, R. H. Broh-Kahn and C. J. Podore. The studies have to do with the excretion of uropepsin by man. It has been found that healthy men excrete appreciable quantities of uropepsin at a fairly constant rate throughout the day and from day to day. The rate of excretion is not affected to any great degree by the volume, specific gravity or acidity of the urine or by factors such as wakefulness, sleeping, or ordinary exercise and the usual fluctuations in dietary habits. The ingestion of food was not found to stimulate uropepsin excretion. Having put the cart before the horse by stating what these observers found in normal men, we should point out that the studies were undertaken in an attempt to find a means of investigating gastric activity that would not involve the unpleasantness associated with the passage of a tube for the collection of gastric juice. Apparently Brucke in 1861 demonstrated the presence in the urine of an enzyme which was actively proteolytic at strongly acid reactions. Bucher in 1947 reviewed the literature on uropepsin and reported some experimental findings. The present authors hold that the accuracy of some of the methods used in this work may be called in question and that much of the work summarized by Bucher requires confirmation. Certain facts, however, are well established. Uropepsin is not found in the urine of dogs or cats whose stomachs have been removed, or in the urine of patients with the *achylia gastrica* of pernicious anæmia. From this it is presumed that the function of the peptic cells of the gastric mucosa is essential for the formation of uropepsin. The source of uropepsin is discussed. If uropepsin originates in the stomach, it must be transported to the kidney by the blood-stream. The mode of entrance of the enzyme into the circulation and the form in which it enters the blood are problematical. Conceivably pepsin may be reabsorbed into the blood-stream after its secretion by the peptic cells into the lumen of the stomach. On the other hand the enzyme might be absorbed into the blood directly from the secreting cells themselves without a preliminary secretion into the lumen. These hypotheses were tested by the feeding of gastric pepsin to healthy adults, to patients with no uropepsin excretion and to normal dogs. These experiments all yielded negative results. It is interesting also to note that when pepsin was injected intravenously into dogs no increase in uropepsin excretion occurred. As the results mentioned suggested that pepsin was not responsible for the excretion of uropepsin, the possibility that pepsinogen might act as a precursor to uropepsin was investigated. Pepsinogen is secreted by the peptic glands of the stomach and is converted to active pepsin in the presence of the hydrochloric acid in the lumen of the stomach. This conversion takes place without delay and there is little opportunity for pepsinogen to exist for a period of time long enough to permit the absorption of appreciable amounts into the blood-stream. This view is supported by the authors' observations that the oral administration to dogs of pepsinogen with or without a buffer failed to increase uropepsin excretion. The only interpretation which they can see is either that pepsinogen cannot be absorbed from within the lumen of the stomach or else that it is converted too rapidly to pepsin, and pepsin is not a precursor to uropepsin. Further, since pepsin is not excreted as uropepsin even after its intravenous administration, uropepsin cannot be derived from a peptic enzyme, once the latter has been secreted into the lumen of the stomach. The conclusion arrived at is that uropepsin is derived from the direct secretion of pepsinogen into the blood-stream by the secreting glands themselves and not from the reabsorption of pepsin from the lumen of the stomach. In the words of the authors, uropepsin may be regarded in the light of an excretion product of an endocrine rather than an exocrine secretion.

With this reference to the preliminary observations of the authors concerned, the importance of the findings on the uropepsin excretion of normal persons becomes apparent. In the discussion on these findings it is made evident that a dissociation may exist between the stimulation of the secretion of gastric juice into the stomach and the excretion of uropepsin. Such a conclusion, we are reminded, is in accord with the observation that caffeine and histamine, both of which are powerful stimulants of gastric secretion, exert no influence on the excretion of uropepsin by the cat. "The apparent dissociation between gastric secretion and uropepsin excretion may reflect a dissociation between the rates of

[1] *The Journal of Clinical Investigation*, November, 1948.

pepsinogen secretion into the circulation and pepsinogen secretion into the lumen of the stomach. Consequently, such factors as do influence uropepsin excretion may do so by affecting the endocrine-like function of the peptic glands of the stomach rather than the exocrine functions of those glands." This brings us to the observations that these authors record on the uropepsin excretion by patients with peptic ulcer and other stomach lesions. Thirty patients with peptic ulcer and fourteen with gastric complaints other than ulcer were observed. It was found that men with peptic ulcer excreted uropepsin at a rate which was approximately twice that observed for healthy men. The observation that uropepsin is not found in the urine of patients with pernicious anæmia was confirmed. It was also found that patients with gastric complaints other than peptic ulcer had an excretion pattern for uropepsin which tended to resemble that of healthy men. In regard to the relationship between gastric hyperacidity and uropepsin excretion, it was concluded that there was no causal relationship between the two factors and that the frequent association of hyperacidity with increased uropepsin excretion is fortuitous and may be ascribed to the influence of unknown factors which may act to increase acid production by the stomach or uropepsin excretion or both.

This work is of importance from two points of view. First of all, it draws attention to a method of examination which is less disturbing to the patient than the passage of a gastric tube or a gastroscope.[1] It will, as our authors remark, be of most use in the differentiation of patients with gastric ulcer from those with other gastric complaints. More important probably is the light thrown on the possible causation of peptic ulcer. According to this work peptic ulcer is likely to be regarded before long as a condition of endocrine origin. The workers from the May Institute for Medical Research and the other institutions named have achieved results which appeal strongly to the imagination. Further reports from them will be eagerly awaited. More work remains to be done in this sphere and it may be that investigators in other places will follow a lead that has been so well given.

Current Comment.

LIFE SITUATIONS AND DISEASE.

MUCH has still to be studied and written about cyclical and recurrent episodes of chronic disease. It is a field to which general practitioners could probably make rich contributions, but the laboratory can tell us a great deal also about the exact nature of some of those physical disturbances associated with emotional stirrings due to the ups and downs of life. Two accounts have recently been published of studies on this subject. One deals with the effects of emotional disturbance on gastric functions,[2] and the other with the emotional effects of adverse situations on the course of diabetes in a young subject.[3] The first of these, by Stewart Wolf and Harold G. Wolff, summarizes many observations made on a modern counterpart of the famous Alexis St. Martin, with a gastric fistula; the second is by Laurence E. Hinkle and Stewart Wolf.

The first of these contributions concerns the experiments made on a man who has a permanent gastrostomy, the result of a traumatic stricture of the œsophagus; some of this work is already familiar through the literature. Other observations have also been made on five men who had preliminary gastrostomy performed before removal of an œsophageal carcinoma. The first subject is employed in a laboratory, a fact which permitted study of his reactions to the local atmosphere and to the varying personalities of different members of the staff. Even the daily observation of the mucous membrane of the stomach was of great interest; the colour varied from light orange-pink to vivid cardinal red, and was recorded by calibration to a colour scale. In the collar of membrane surrounding the opening it was easy to see and to estimate the degree of turgidity. Motor activity of the stomach was recorded by noting the pressure of a balloon in the stomach on a water manometer which registered on a revolving drum. The gastric juice was continuously siphoned off and analysed at frequent intervals for its acid content. Finally gastroduodenal blood flow was estimated by a special thermal gradientometer. These arrangements disclosed some interesting findings. The irascible reactions of a member of the staff, for example, when he entered the room and began a search for papers mislaid by the subject of the experiment, caused not only pallor of the subject's face, but also of his stomach. In general, fear and dejection were regularly associated with a lowering of all gastric function, the flow of gastric juice being accompanied by a similar diminution of saliva. But when feelings of disgust or guilt disturbed the subject, nausea was felt, and the flow of saliva and gastric mucus was increased, though all other gastric functions were lowered. Menacing situations were accompanied by anger and resentment, while the gastric functions were greatly increased, the mucosa flushing deeply, and the acid production being doubled. Wolf and Wolff remark that this man was an active, sensitive person of Irish extraction. Perhaps some physiological purist would like to carry out parallel experiments on persons of other nationality. One of the really interesting points about the experiment was that though the subject's resentment or other emotion induced by the circumstances of life was usually of short duration, it was sometimes continued over a fairly long period of time, during which the characteristic variations in the function of the stomach were sustained, returning to the norm when the situation was resolved. This permitted the hazards of prolonged engorgement of the gastric mucosa to be investigated. Under such conditions a lowering of the pain threshold of the mucosa and an increase in its fragility were found, so that it was easily possible to produce small hæmorrhagic lesions by minor damage. When such a lesion was exposed to the action of gastric juice continuously for several days a punched-out ulcer appeared, while pain was felt and the output of acid was increased in the whole stomach. Similar observations were carried out on other subjects, but one of the most valuable was a comparison of the findings before and after section of the vagus nerves. This procedure was part of the operation on the œsophagus. Before it was performed flushing of the face and signs of anger were accompanied by corresponding changes in the stomach, but after vagotomy the stomach remained quiet and pale in spite of the other evidences of emotional excitement. The action of drugs was also studied. "Benadryl" and "Urogastone" produced inhibition of gastric activity when given during an average phase of activity, but were without effect during a phase of hyperactivity. The authors discuss the biological significance of the various patterns of gastric function observed in their experiments. Hyperfunction they take to be an indication of the symbolic need for sustenance in times of stress. Nausea they suggest is associated with the desire for rejection of a noxious stimulus. They note, too, with interest the existence of partial patterns, variants quite familiar in the ordinary run of practice. Life situations, they conclude, that give rise to anxiety and conflict may produce reactions expressive of the way in which the individual would deal with

[1] For details of the method of examination the original paper must be consulted.

[2] *Transactions and Studies of the College of Physicians of Philadelphia*, December, 1948.

[3] *The American Journal of the Medical Sciences*, February, 1949.

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SYDNEY

the position. The stomach might be expected to share in the demonstrable changes, since its function is concerned so closely with the pressing needs for survival.

Hinkle and Wolf's similar studies on a girl of fifteen years with diabetes are based on the fluctuations in acidosis and their relation to environmental disturbances of the psyche. That diabetes is susceptible to emotional influences is known. Perhaps the simplest demonstration of this is to be found in the production of glycosuria by emotion. This has been proved in both man and experimental animals. In this study the girl observed, who was very cooperative, kept a diary of the happenings day by day, with a record of her feelings and attitudes towards them She had had repeated episodes of acidosis. She was intelligent, but resentful towards her mother, who was ill balanced and subject to violent outbursts of psychological origin. She was treated with high dosages of protamine and crystalline insulin, and made tests of her urine daily before each meal during the hundred days of the experiment. Her mother checked the regularity of insulin administration. An interesting account is given by these authors of the emotional changes through which the girl passed during this time, and the environmental reasons for them. The maladjustment to life which was evident in this patient was expressed by the arousing of emotions such as fear and rage, and corresponding changes in her metabolism were noted. When confidence was restored, and security gave her calm the acidosis observed during the stormier episodes disappeared. Care was taken to ensure that diet and insulin dosage were not disturbed during these episodes. On occasions when the girl was admitted to hospital further checks were made, and no alterations in treatment were permitted so as to exclude all factors save those acting directly on the nervous system. On one occasion within twelve hours of the occurrence of a situation of stress ketonuria appeared, and with the continuance of stress ketosis progressed to the point of clinical acidosis. Reestablishment of confidence coincided with the resolution of the acidosis.

These sets of observations are of value as they have been carefully made. They show once again how important it is for the physician to try to alleviate that "strain and stress" that Whittier spoke of, and to substitute the "beauty of peace". This is perhaps the function of the priest also, but even in these days of laboratory medicine we may hope that the two functions may be combined, in the words of Osler, "in the humble person of the physician himself".

THE NEWER TREATMENT OF INFARCTION OF THE HEART.

EVER since the introduction of the anticoagulant drugs physicians have looked forward to their use in the treatment of infarction of the heart. Many patients, who survive the shock and cardiac embarrassment resulting from myocardial infarction and who might be expected to recover, albeit with a weakened heart, nevertheless die within a few weeks from a fresh coronary thrombosis or from embolism resulting from thrombi within the heart. It has been felt that, if the blood could be made and kept incoagulable for a few weeks, these disappointing and dangerous complications would not occur. Many experiments have been made with promising results and already heparin and dicoumarol are much used, though not generally, in the treatment of infarction of the heart. The profession has been cautious in employing medication so fraught with danger in the absence of strict biochemical control, a control which is scarcely to be had except in metropolitan centres. However, this new treatment of cardiac infarction has recently been very carefully and extensively tried in America and so unequivocal are the conclusions as to its value that it must come into more general use everywhere.

We reviewed this subject once before in these columns, on November 15, 1947. We then alluded to a "Committee for the Evaluation of Anticoagulants in the Treatment of Coronary Thrombosis with Myocardial Infarction" under the chairmanship of Dr. Irving S. Wright of the New York Hospital, set up by the American Heart Association in 1946, and we mentioned the great interest with which its report was then awaited. The work of the committee proceeded for some two years, supported by grants from the United States Public Health Service. A study of one thousand patients with myocardial infarction has now been completed and the committee has published an interim report based on the first 800 of these.[1] It is this interim report that contains the unequivocal conclusions we have referred to. They are as follows:

> On the basis of data compiled from 800 cases of coronary occlusion with myocardial infarction, it is concluded that:
>
> 1. Patients treated with anticoagulant therapy in addition to the conventional forms of therapy experience a death rate and incidence of thromboembolic complications during the first six-week period following an attack which are markedly lower than those experienced by patients treated solely by conventional methods.
>
> 2. Anticoagulant therapy should be used in all cases of coronary thrombosis with myocardial infarction unless a definite contraindication exists.
>
> 3. In the absence of other hæmorrhagic states, the hazards from hæmorrhage due to anticoagulants are not sufficient to contraindicate their use in the treatment of coronary occlusion providing there are facilities for adequate laboratory and clinical control.

The principles used as guides in the administration of anticoagulants by the committee, which are those generally agreed upon, were that heparin might be given for the first forty-eight hours or more, that prothrombin determinations were to be made each day and that no dicoumarol was ever to be ordered before the result of the day's determination was to hand. It was recommended that 200 to 300 milligrammes of dicoumarol should be given daily till the prothrombin time was 30 seconds, that 50 to 100 milligrammes should be the dose if the prothrombin time was between 30 and 35 seconds and that dicoumarol should be withheld if the prothrombin time was 35 seconds or more and none given again until the prothrombin time had come down to 30 seconds or less, after which the drug should be given cautiously in doses of 100 milligrammes. It was advised that the dicoumarol treatment should be continued for thirty days after the last thromboembolic episode. Injections of menaphthone and transfusions of blood were recommended in the event of hæmorrhage. A particular technique for the determination of the prothrombin time was suggested.

Infarction of the heart is a disease which every doctor meets frequently. It is one which cripples and kills not only in the sere and yellow leaf, but often in the prime of life and sometimes in youth. Indeed, it is one of the most common causes of death amongst the medical profession itself, as well as in other groups of the intelligentsia. We have known for some time how to nurse and treat the person who is afflicted with this disease: now we have new drugs and the knowledge that by their use many of those complications, which have hitherto often frustrated our other treatment, are preventible. In the words of King Edward VII: "If preventible, why not prevented?" The drugs are readily available and the biochemical methods which are necessary to control their use are not complicated. Both have already a wide field of application in medicine and surgery apart from their value in infarction of the heart; for example, they are used in the treatment of thrombophlebitis, in arterial surgery and after splenectomy. They have been succinctly described in an article on "Anticoagulants in General Practice" by Dr. W. McI. Rose, of Melbourne, in this journal on May 1, 1948. We believe that the time has come when facilities for the determination of the prothrombin time should be brought into existence at every base hospital throughout the country where they do not already exist, and that all medical practitioners should become familiar with their use. We commend this matter to the Departments of Health of the several States as one which they might well take in hand.

[1] *American Heart Journal*, December, 1948; *The Journal of the American Medical Association*, December 11, 1948.

Abstracts from Medical Literature.

DERMATOLOGY.

Treatment of Hyperhidrosis and Symmetric Lividities of the Feet.

J. G. HOPKINS, A. B. HILLEGAS, R. B. LEDIN, G. B. REBELL AND E. CAMP (*Archives of Dermatology and Syphilology*, May, 1948) discuss cases of severe inflammation of the feet in which it appeared that the essential cause was hyperhidrosis. The cases were of two types. The larger group was of men with excessive sweating of the entire foot. The skin was often macerated. There were often erythema and œdema of the dorsal and plantar surfaces of the toes. The patients complained of burning and pain rather than of itching. Patients in the other groups had a curious type of lesion mostly with, but sometimes without, general hyperhidrosis. Sharply bordered plaques of white soggy skin were present on pressure areas surrounded by narrow violet-red borders, often exquisitely sensitive to touch. They occurred most frequently on the sole of the heel and the heads of the metatarsals, but also on the plantar and lateral surfaces of terminal phalanges. Formaldehyde and alum were used in an effort to reduce sweating and tannic acid with the purpose of preventing maceration. The following preparations seemed most useful: (i) foot bath of 4% potassium alum solution; (ii) a 4% solution of formaldehyde painted on the affected areas; (iii) in denuded areas, tannic acid ointments 10% to 20% in a carbowax base; (iv) in prolonged treatment, a powder composed of 25% exsiccated potassium alum and 75% talc appeared the most satisfactory of alum powders, but powders containing 5% paraformaldehyde in talc or bentonite gave more permanent and decisive results. Of 43 patients who used the paraformaldehyde powder only nine showed evidence of dermatitis.

Steroid Hormones.

J. H. LAMB, E. S. LAIN, C. KEATY AND A. HELLBAUM (*Archives of Dermatology and Syphilology*, May, 1948) state that numerous observations point to a relationship between the steroid hormones and certain dermatological disorders, particularly conditions associated with profound systemic and metabolic changes. They review relevant literature and describe their own studies. They state that significant clinical improvement was effected in four cases of dermatomyositis by the injection of testosterone propionate. Evidence of disturbed ovarian function was observed in thirteen female patients with *lupus erythematosis*; there was moderate to severe creatinuria during the active stage of the disease and comparatively low 17-ketosteroid excretion; seven of the patients received steroid hormones with benefit. Six men with polymorphic photosensitive eruptions presented moderately depressed or low 17-ketosteroid excretion accompanied by creatinuria during the active stage of the eruptions. The authors did not make any detailed studies of *hydroa vacciniforme*, but two pre-adolescent girls with relatively high urinary 17-ketosteroid levels for their age group were relieved of their photosensitivity with injections of small doses of œstrone (aqueous "Theelin"). The authors suggest that in the group of diseases presented there is evidence of disturbed steroid and protein metabolism as evidenced by abnormal creatinine, creatine and 17-ketosteroid excretion. Amino acid and vitamin therapy has been observed to be of value in mediating the response to steroid therapy in these cases.

Epithelioma following Local Treatment with Liquor Picis Carbonis.

G. HODGSON (*The British Journal of Dermatology and Syphilis*, September, 1948) reports the case of a man, aged sixty-two years, who had suffered from *pruritus ani* for over seven years. In 1940 he was examined and a 3% solution of *liquor picis carbonis* was prescribed. He continued to apply the lotion without medical supervision for six and three-quarter years once or twice a day. On examination after that time the anal margin was rugose and the perianal skin thickened and excoriated. Adjacent to the anus was a typical tar wart, and a frank epitheliomatous ulcer some three-quarters of an inch in diameter was found just below the anus on the median raphe of the scrotum. Biopsy showed the lesions to be squamous-celled epitheliomata. The tar wart was removed by diathermy and the other lesion was treated by X rays.

Nodulo-Ulcerative Granuloma of the Legs.

J. F. BURGESS AND J. E. PRITCHARD (*Archives of Dermatology and Syphilology*, April, 1948) report a case of granuloma of the legs, with lipoidal changes compatible with a diagnosis of *necrobiosis lipoidica diabeticorum*, in a diabetic woman aged fifty-two years. She was given daily intramuscular injections of 250 milligrammes of a preparation of vitamin *E* for ten days. Improvement was noted after one week, with disappearance of pain and tenderness and healing of the ulcerated areas. When the injections became painful oral therapy with a vitamin *E* preparation was substituted, 100 milligrammes being given daily by mouth. One month later healing had occurred. There was residual erythema, with atrophy and telangiectasia, but no thickening. Oral treatment was continued and four months later the area was represented by a residual atrophic scar. Histological studies showed rehabilitation of collagen fibres, coincident with disappearance of the granulomatous reaction and lipoidal depositions. The authors consider that these changes were certainly brought about by the treatment with vitamin *E*.

Dermatitis of the Hands.

B. H. WINSTON (*Archives of Dermatology and Syphilology*, March, 1948) states that pitfalls in relying on the results of allergy tests in the investigation of dermatitis of the hands are, first, that one cannot be certain that the substance primarily responsible is included among the test substances used, and, secondly, that many substances yielding no reactions on uninvolved skin may irritate the affected skin. To overcome this the author recommends elimination of all contact irritants, treatment for local infection, when present, with drugs rarely productive of irritation, and eradication of focal infection in cases of long standing. If these measures prove ineffective, ingestant or inhalant allergens should be suspected. So-called recurrent vesicular eruptions of the hands, pompholyx and vesico-pustular lesions respond to these measures. Adequate diagnosis is a prerequisite to treatment, and depends on knowing whether this disease is due to external or internal agents, whether it is due to physical or chemical agents or to parasites, and to what extent it is due to a multiplicity of such factors. In dermatitis of the hands the factors most frequently operative are external and chemical. Staphylococci are commonly secondary invaders in skin first injured by chemicals. If hands are subject to trauma to skin, dermatitis due to internal or infectious agents is relieved by protection from contact irritants. Removal from contact irritants in the patient's home or business accounts for the quick recovery which often follows admission to hospital of patients with intractable disease, although the treatment has not otherwise been changed.

UROLOGY.

Morbidity after Prostatic Operations.

C. H. SHIVERS AND C. E. GROOM (*The Journal of Urology*, May, 1948) have compiled a large statistical survey of prolonged morbidity incidence after the various types of prostatic operations, open and perurethral. The total number of operations was 14,865. Of these there were 2535 one-stage suprapubic prostatectomies, and 3329 in two stages, 493 perineal prostatectomies, 6782 single resections and 1726 multiple resections. The highest mortality rate was 4·4% in the two-stage prostatectomy group, the lowest 2·2% after single resections. The incidence of prolonged morbidity, over all, was 8·4%. In order of their frequency, the most common complications were obstruction, infection and residual urine. The most frequently performed operation was perurethral resection. The morbidity rate of multiple resections was considerably higher than that of single resections. The next most frequently performed operation was suprapubic prostatectomy. Two-stage prostatectomy presented the lowest morbidity of any prostatic operation. Perineal prostatectomy represented 3·3% of the total number of operations in this survey. Perineal fistula and urinary incontinence were the most frequent complications of the operation.

Prostatic Response to Œstrogen.

C. HUGGINS AND W. O. WEBSTER (*The Journal of Urology*, February, 1948) state that the administration of œstrogen to human males evokes a different response in the posterior lobe of the prostate from that occurring in the anterior region of the gland. The authors present this differential reaction as evidence that these two regions are functionally different structures. It is well known that adenoma of the prostate is essentially pre-spermatic in origin (that is, arising anterior to the ejaculatory ducts), while carcinoma usually arises in the posterior lobe. This has led to the inference that these two regions are different functionally. However, there has been no proof of this. The authors believe that they have demonstrated the functional ductility of the human prostate

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by observing its reactions to the administration of œstrogen. Until recently, much more was known about the effect of œstrogen on prostatic carcinoma than on the normal prostate. Disintegration of the cells of prostatic carcinoma has been proved by many observers. It has been shown that the cells of prostatic adenomata display little change, although in the urethral and ductile epithelium there occurs squamous stratification of the normal transitional epithelium. The object of the present study was to compare the anterior region of the normal prostate with the posterior lobe after œstrogen administration. The authors point out that the high lipid content of human prostatic fluid has been known for many years. This fat consists of cholesterol and a phospholipid called cephalin. Frequently macrophages packed with lipid are found. The macrophage granules stain red with eosin. This fact has been used in the differentiation of the prostate. After exposure to the effect of œstrogen it was noted that this red response was retained in the posterior lobe only, even though all regions of the gland secrete cholesterol and cephalin. This result means that some secretory capacity has been retained by the posterior-lobe cells, and lost by the cells of the anterior part. Retention of cylindrical epithelium (which includes secretory capacity) in the posterior lobe, while it is lost in the anterior part, signifies that posterior-lobe cells can maintain themselves on less androgen than the anterior cells. Nevertheless, it is well known that prostatic carcinoma usually arises from the posterior lobe. This would indicate that the carcinomatous change lowers the androgenic threshold of the involved cells, so that œstrogen causes greater damage to cancer cells than to normal posterior-lobe cells.

Value of Orchidectomy in Prostatic Carcinoma.

W. W. SCOTT AND J. A. BENJAMIN (*The Journal of Urology*, October, 1948) have made a follow-up study of 82 patients with carcinoma of the prostate treated by bilateral orchidectomy. They found that of the total number 13% had died of other causes, 54% had died of carcinoma, and 33% were living, 18% of the latter having survived for more than five years. When these patients were compared with a control series of patients who did not undergo orchidectomy, it was found that about 30% more died among patients who did not have orchidectomy.

Osteitis Pubis.

M. L. ROSENBERG AND S. A. VEST (*The Journal of Urology*, November, 1948) describe four cases of *osteitis pubis*, all encountered recently within a period of a few months, two after Millin's retropubic prostatectomy, and two after perurethral prostatic resections. The authors state that it is remarkable that during 1500 prostatic operations of all kinds in the previous seven years, they met no single instance of this disease. They point out that distinct osteomyelitis of the pubis, with bone destruction, abscess and sequestrum formation, has long been known, but Edwin Beer first described *osteitis pubis* as a separate clinical entity in 1924. The onset of the disease occurs several weeks after operation, the latter usually on the bladder, and is characterized by a suddenly appearing pain over the pubis, usually to one side. Localized tenderness over the pubis is diagnostic. The pain increases after the onset, and within a few hours, or days, becomes excruciating. There is great distress on movement and the patient lies in one position with the lower limbs flexed. Prominently there is intense spasm of the abductor muscles of the thigh, which causes almost unbearable discomfort. The disease may spread to other parts of the pelvic girdle, and all kinds of movements involving pull of muscles of this part becoming very painful. Pyrexia may be absent when the disease is at its height, but may be present in low grade before the onset of symptoms. Soon after the onset of symptoms X-ray changes appear in most cases as a haziness in the outline of the pubis or its rami. About the third week there is a frayed and puffed appearance of the periosteum.

Mesoblastic Nephroma in Adults.

O. S. CULP AND F. W. HARTMAN (*The Journal of Urology*, October, 1948) state that embryonal neoplasms of the renal cortex have been reported with more than fifty different pathological diagnoses. The confusion in nomenclature is extreme, and has no parallel elsewhere in surgery. The authors review the literature and present a study of eight of their own cases. They are convinced that all of these embryonal neoplasms are closely related rather than distinct morphological entities. It is suggested that they should all be called mesoblastic nephromata and that more complicated pathological terms, as well as the name Wilms's tumour, be avoided. The most conspicuous cellular variations can be included in the mixed, carcinomatous and sarcomatous groups. Further differentiation has no virtue and only adds to the chaotic state of the literature. These neoplasms occur at any age in both sexes, and in either kidney; they usually are very malignant, tend to recur after nephrectomy, metastasize most frequently to lymph glands, lungs and liver, cannot be distinguished from other renal neoplasms clinically and seem to be influenced very little by irradiation. The clinical course is usually rapid, and most deaths occur within twelve months of diagnosis and treatment.

Cutaneous Ureterostomy.

B. S. ABESHOUSE (*The Urologic and Cutaneous Review*, December, 1948) discusses the advantages, disadvantages, indications and technique of cutaneous ureterostomy on the basis of experience in thirty cases. He comes to the conclusion that cutaneous ureterostomy is an operation of recognized merit in selected cases. It is the operation of choice and necessity for patients with inoperable vesical carcinoma suffering from severe pain, toxæmia and dilatation of the upper urinary tract. In such cases the operation is a life-saving procedure, and affords immediate relief by diverting the urinary stream. The operation is not meant to supplant uretero-sigmoidostomy. The latter operation is preferable when there is little dilatation or infection of the upper urinary tract. Cutaneous ureterostomy is a relatively simple operation, well tolerated by even the poorest surgical "risks". The immediate mortality rate is very low. Life expectancy is increased, and not infrequently patients with conditions previously considered as hopeless show such improvement that subsequent radical procedures, such as cystectomy, nephrectomy or reimplantation of the ureter into the bowel, can be successfully performed. The morbidity rate is also very low considering the state of most of these patients. The author has devised a plastic skin procedure to preserve patency of the ureteric stoma and to facilitate fitting of a collecting apparatus.

Carcinoma of the Prostate.

F. A. ARNHEIM (*The Journal of Urology*, October, 1948), from a study of post-mortem findings in 176 cases of carcinoma of the prostate, concludes that 139 patients died of the disease; 37 died of other causes. Of the carcinomata 96% were adenocarcinomata. Metastases were not discovered in one-third of all cases. One-third of all the metastases were visceral. Bone and lymph gland involvement constituted 66% of all metastases. Periaortic, iliac and tracheo-bronchial lymph glands were involved in that order of frequency. The bladder was usually involved by direct extension. The author states that carcinoma of the prostate is biologically active in some individuals and inactive in others.

Streptomycin in Urinary Tuberculosis.

R. M. NESBIT AND A. W. BOHNE (*The Journal of the American Medical Association*, November 27, 1948) state that our attitude towards the treatment of renal tuberculosis should be radically altered now that streptomycin is available. Clinicians are now treating several types of urinary tuberculosis with prolonged sanatorium care and full courses of streptomycin. The minimum period for the former is six months, for the latter ninety days. Opinions as to the daily dosage of streptomycin vary, but many have found that the most effective daily dose is from 1·5 to 2·0 grammes. The types of the disease now being treated in this way are bilateral renal tuberculosis, residual cystitis following nephrectomy, and finally clinically unilateral renal lesions with no pyelographic evidence of the disease. When unilateral renal lesions are demonstrable pyelographically, most urologists are using nephrectomy with short pre-operative and post-operative courses of streptomycin to prevent traumatic spread of the disease. However, one should think of the whole of the patient's tuberculosis when treating the disease—he has lesions possibly in the opposite kidney and elsewhere—and he should have full sanatorium and streptomycin therapy, even after nephrectomy. One may take a different attitude, however, and defer nephrectomy until three months' sanatorium care and sixty days' streptomycin therapy at 2·0 grammes per day are given. If, at the end of this period, symptoms remain unaltered and pus and tubercle bacilli are still found in the urine, nephrectomy should be carried out. Post-operatively, another three months of sanatorium care and a further sixty days of streptomycin treatment are given. Most patients after such a course have suffered some loss of vestibular function, and a few have defective hearing, but they are alive, although a bit "wobbly". Obviously, past figures prove that nephrectomy alone has failed dismally in the past, for such patients have had only an even chance of cure.

Special Article.

THE OFFICIAL MEDICAL HISTORIES OF THE WAR OF 1939 TO 1945.

In the last thirty-five years we have seen two world wars. Probably at no time in history, except when the Black Death stalked through Asia and Europe, have the consequences been so dire or the changes wrought so significant. Such events, viewed in the light of history, have good as well as evil in them. Six hundred years ago the Black Death, by reducing the population to such an alarming degree, finally broke up the feudal system. Man became more conscious of his value and possibilities, and Europe saw the revival of art and learning. From those dark times the Western World moved with quickened steps towards the Renaissance.

Future history books will reveal equally profound changes in human affairs as a result of two great wars in the twentieth century and describe the upsurges of endeavour and accomplishment which followed those world disasters.

But the march of human progress has not been fully chronicled and the gaps in history can never be filled. Millions have taken part in events and felt something of their impact, but few have had more than meagre and passing impressions of their import. In the past only a handful of contemporary writers and historians have attempted to describe the salient happenings of their day and to relate them, if only vaguely and imperfectly, to the march of history. There have been too few historians and far too few students of history. In consequence, knowledge acquired in one generation has been lost entirely or in part to succeeding generations and has had to await rediscovery. It would be interesting to compute, if that were possible, how much the world has lost through this circumstance, and how far we are behind in knowledge and happiness because we did not take note of and profit by our successes and errors.

It is therefore of some interest to find an increasing awareness of the value of history on the part of governments in recent times and to see a greater importance attached to the recording of events while they are fresh in the memory, with the object of assisting the growth of knowledge and of providing a detailed and accurate picture of our times for retrospective historians.

Thus, official historians were appointed by several governments to record the events and bring out the lessons of the war of 1914 to 1918, and teams of historians are now engaged throughout the British Commonwealth of Nations and the United States of America in a similar task relating to the war of 1939 to 1945. The great advantage of "official histories" is that they are more detailed, more accurate and of greater scope than others. The official historian possesses many sources of material not open to the unofficial historian.

The Official Medical Histories.

Of the official histories now being prepared, the official medical histories, which aim to bring out the lessons of the war in the broad field of medicine, should prove of particular interest and value. The course of a man's fate in war, the provisions made for his maximum protection, his repair and recovery when disabled, and the scientific knowledge and progress which lie behind these measures are matters of general interest and concern.

The first official medical history of war concerned the Crimean War and was published in two volumes in 1858. Seven years later a medical and surgical history of the French Army in the Crimea was published, to be followed in 1871 by an account of the Russian medical and surgical experience in that campaign, published in Berlin. An outstanding official medical history of the last century was that concerning the American Civil War of 1861 to 1865. It took eighteen years to prepare, comprised only two volumes, one medical and the other surgical, and by its excellence gave much impetus to progress in medicine and surgery. Other official medical histories of the ninteenth century included one by the German Ministry of War on the Franco-Prussian War, published in the period 1884 to 1891 (eight volumes), and one by the Japanese Health Administration published in 1911 concerning the naval war of 1904 to 1905 between Russia and Japan.

After the 1914-1918 war the need for recording the medical experiences and lessons of war became more evident and official medical histories assumed greater importance and scope. The British medical history (1921 to 1931) comprised twelve volumes, the Australian (1930 to 1940) three volumes, the Canadian (1925) one volume, the New Zealand (1924) one volume and the United States (1921 to 1929) fifteen volumes.

Copies of the volumes of these official medical histories are to be found throughout the world in government and university libraries. They were and continue to be of value to members of the medical profession, to statesmen, to administrators and to students, for they relate how the medical problems of that war were met, and how new discoveries were made and applied.

When a second world war broke out not many years after their publication, these histories proved of profit as works of reference. When crisis comes, a guide, though rendered out of date in some respects by time and change, is better than no guide at all, until the bases of action are set and structures adapted to withstand the new stresses and strains.

In Great Britain the need to prepare a medical history of the war was realized soon after the outbreak of hostilities. References to the history of the 1914-1918 war revealed that, valuable though it was, it would have been of still greater usefulness if it had been more comprehensive and if its preparation had started earlier. It was decided, therefore, to begin early, and as a result of an inter-departmental conference held in March, 1941, an Editorial Board under the chairmanship of the Right Honourable R. A. Butler, M.P., President of the Board of Education, and composed of the medical directors of the fighting and civilian departments, was set up to direct its preparation. Sir Arthur S. MacNalty, K.C.B., formerly Chief Medical Officer of the British Ministry of Health, was appointed Editor-in-Chief, and the Board held its first meeting in July, 1941. Sir Cyril Flower, C.B., Deputy Keeper of the Public Records, subsequently took over the chairmanship of the Board. A subcommittee composed of editors representing the various government services, and responsible for the preparation of their respective services' contributions to the history, was appointed, together with clinical editors, to carry out the directions of the Editorial Board. A headquarters staff was set up, which acts as a centre of coordination for these various activities and researches.

Thus, while history was in the making, it was also being recorded, in order to provide a nucleus of first-hand documentation and appraisal of events for subsequent incorporation in the history. The work is now well advanced and it is anticipated that a number of the volumes of the British medical history of the war will be published within the next few years.

In the United States a medical history of World War II was begun in September, 1942, under the auspices of the Division of Medical Sciences of the National Research Council in Washington, D.C. The Editorial Board set up by the Council to direct this work, which it was estimated would run to fourteen volumes, was animated, like the British Editorial Board, by the conviction that source material should be gathered contemporaneously in order to avoid time-consuming and costly research at the end of the war. The United States Editorial Board was presided over by Professor John F. Fulton and a comprehensive plan for the history, together with a detailed list of editors and assignments, was issued in 1944. Subsequently, in the autumn of that year, radical changes were made in the United States plans for the history, the compilation of which, it was decided, should be the responsibility of the Federal Government, and the Surgeon-General of the United States Army announced the appointment of an Editorial Advisory Board on the History of the Medical Department in World War II, the chairman of which was Colonel Albert G. Love. Colonel J. H. McNinch, M.C., U.S.A., Director of the Historical Division, Office of the Surgeon-General, was appointed Editor-in-Chief. The United States Navy similarly undertook the preparation of its own medical history of the war, Captain Louis H. Roddis, M.C., U.S.N., being appointed its editor. Work on the United States medical history is proceeding apace, and like the British history it is likely to appear within a reasonable space of time.

Planning for the Australian medical history was begun in 1943. In 1944 Major-General R. M. Downes was appointed editor, but he was unfortunately killed in an air accident while on his way to New Guinea. In 1945 Dr. Allan S. Walker, who had originally been appointed Editor, but who had been unable to accept the appointment, undertook the work. It is expected that the history will comprise four large volumes, and the Editor and his contributors are now making good headway on a task of special value, as Australia's war experience was diffused over a wide area and it has much to offer in the field of tropical diseases.

The Canadian medical history was begun in 1944. Lieutenant-Colonel A. R. Gordon was appointed the Official Historian, and was succeeded in June, 1946, by Lieutenant-

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Colonel W. R. Feasby. This history is also evolving rapidly, and it is expected that sections will be in the hands of the publishers within a year or two.

The assembly of material for a medical history of New Zealand was begun in 1945, but it was not until the summer of 1947 that Dr. T. D. M. Stout, D.S.O., O.B.E., was appointed Official Historian. The New Zealand medical history is expected to comprise two large volumes.

Plans for the Indian medical history began in 1945, the Chief Collator and Editor being Lieutenant-Colonel J. G. Thomson. When India and Pakistan became independent Commonwealth countries in 1948, the responsibility for its preparation remained with the Combined Inter-Services Historical Section (India and Pakistan) in Simla, and Lieutenant-Colonel B. L. Raina became Chief Collator and Editor. The Indian and Pakistan histories, which will inevitably link up with the record in the United Kingdom history of the British forces in India during the war, will be contained in about twelve volumes, some of which will probably be published within the next few years.

In South Africa an Historical Records Committee was formed in December, 1940, but it was not until the end of the war, in 1945, that plans were drawn up for an official medical history, when Colonel C. C. P. Anning was appointed Official Historian. It is expected that the South African medical history will be contained in two volumes.

The Scope of the Medical Histories.

Broadly speaking, all the official medical histories will be divided into three main sections: (i) the evolution and development of the administrative services to meet war conditions; (ii) the medical aspects of the campaigns; and (iii) the advances in clinical medicine and surgery. There will also be sections on medical research and statistics.

The Administrative Services.

It is perhaps inevitable that of all forms of government administration, that relating to the fighting services must have the least chance of ordered and continued development. If our aspirations to end wars were fulfilled, these services could cease to exist. Instead we fluctuate between wars and periods of peace, and the history of these services, and particularly the medical services, reflects the political scene in periods of prominence and relative oblivion. When the world atmosphere is tinged with optimism, all organizations connected with war are looked upon with some distaste, and everywhere the trend is to neglect them. The story of these services in the official histories will relate how they expanded from small peace-time organizations and became, by force of circumstance, huge and complex services vitally necessary to nations at war; it will tell of the difficulties, delays and lessons of that transition and draw conclusions which may assist in avoiding the repetition of previous errors if future emergencies befall.

The Medical Aspects of the Campaigns.

The section of the histories dealing with the medical aspects of the campaigns will fully describe the arrangements made for the medical care of the fighting men on land, at sea and in the air. The solution of the diverse problems in differing terrains and in varying corcumstances had some early help from previous experience, that of the 1914-1919 war being related to similar conditions in the first stages of the 1939-1945 war. But the picture changed as the war progressed. Old methods had quickly to give way to others, better adapted to the newer technique of battle, and medical organization in the field was developed to cope with the increasing difficulties of intense and mobile warfare in Europe and Africa and with the special problems of tropical fighting in South-East Asia and Australasia. No one knows better than the fighting man himself what the existence of an efficient medical service means. A commander's dispositions depend on it, and the man in the line, knowing that it reaches right up to him, is much less apprehensive of his fate. Medical science was, in fact, largely focused on the serviceman during the war, and the urge given to medicine by his requirements not only helped to win the war, but brought new gains and lustre to medical science.

Clinical Medicine and Surgery.

The section on clinical medicine and surgery will describe the medical hazards inherent in the herding together of masses of men and women from different localities, variously susceptible to disease, and the measures taken to protect them. Among these hazards is that of sending members of the forces to those parts of the world where diseases not encountered at home are prevalent, such as cholera and plague. The hygiene of the fighting man, his protection from infectious disease, will be considered, the latter being a special problem in view of the disequilibrium caused by warfare in the movements of large masses of people and the greater opportunities there are for the dissemination of bacterial infection.

The work of the epidemiologists will have due place in these records. The work done to control the spread of communicable diseases, especially in South-East Asia and Australasia, was of paramount importance to the outcome of the war. The measures for combating malaria, for example, and the important research work done on this subject in Australia during the war had, together with the development in the use of insecticides, an undoubted influence on the course of the eastern campaigns.

Perhaps greater and more spectacular progress was made in the treatment of wounds and injuries, partly owing to new knowledge and partly to a speedy practical application of known techniques. The histories will describe how the chance of survival of the wounded man was greatly increased by the availability in forward areas of blood and plasma for transfusion and by the advent of the sulphonamide drugs and subsequently penicillin, with a consequent increased control over wound infection. This was probably one of the greatest benefits which the war conferred upon mankind in life-saving. It also affected favourably the prevention and treatment of shock. Much progress was made in the treatment of burns, earlier methods giving way during the war to pressure dressing and a better control of shock. This progress, together with improved knowledge of the control of burn infection, quickened processes of healing, and great strides in plastic surgery resulted in a great reduction in disfigurement as compared with previous wars.

The histories will record the great progress in the surgery of the brain and peripheral nervous system. There will also be important sections on psychiatry and rehabilitation. Special problems, such as those relating to aviation, marine warfare, tropical diseases, and the treatment of conditions arising from heat and cold, will be among many others to be considered.

War-time medical statistics will also have an important place in the histories. The value of such data is enhanced by the fact that they will refer to more or less "closed communities", the statistical analysis and appraisal of which are of greater accuracy and significance than they would be in other circumstances.

Finally, the great amount of medical research done during the war, to which so much is owed by medicine and surgery, and which is the fountain from whose source have flowed so many practical benefits to mankind, will have a special place in the histories.

Collaboration in the Preparation of the Official Medical Histories.

As in the case of the 1914-1918 war, all the British Commonwealth countries and the United States of America are preparing their own independent official medical histories. Unlike the earlier histories, in the compilation of which the historians ploughed their own lonely furrows, with little help from outside, the present histories are being written in the light of free interchange of experience and opinion. This is a new development and in itself an historical event.

When the war ended in 1945 a number of the histories were already in preparation, and it had become evident that full and accurate recording of each nation's part of a great combined effort could not be made alone. The war's experiences were shared. The medical problems were essentially the same for all; they had presented themselves to all and had in some cases been tackled in collaboration. Armies and their organizations having mingled in joint campaigns and experience, the accounts of those campaigns and experience could not be given adequately without consultation and mutual assistance.

Accordingly a Conference of Commonwealth Medical Historians was held in London in January, 1946, to explore the possibilities of such collaboration. The Conference recommended to the governments concerned the setting up of a Permanent Official Medical Histories Liaison Committee, which would act as a central agency for the exchange of preliminary narratives and other information between historians, and provide facilities for its members to meet from time to time in order to review progress, consult together on technical questions and propose solutions of such problems as relate to the correlation of data, avoidance of overlap, balance as between one medical history and another, and methods of presentation.

The Conference's recommendations were approved by the British Commonwealth Governments, the Liaison Committee being composed of the Official Medical Historians of Aus-

tralia, Canada, India, New Zealand, South Africa and three or more members of the Editorial Committee of the United Kingdom Official Medical History. One of the recommendations of the 1946 Conference indicated the importance of inviting the United States to collaborate in this work, and in 1947 United States observers joined the committee.

The first meeting of the Liaison Committee was held in Ottawa in September, 1947, at the invitation of the Canadian Government, and the second took place in Corpus Christi College, Oxford, in August, 1948, by the courtesy of the president and college authorities and at the invitation of the United Kingdom Government. The next meeting is to be held at Canberra from October 3 to 8, 1949, at the invitation of the Government of the Commonwealth of Australia. At this meeting special consideration will be given to medical problems associated with the joint campaigns in the Near East, Burma, South-East Asia, Australasia and the Pacific Islands, and to the progress made in those areas during the war in the prevention and treatment of tropical diseases. Both at Ottawa and at Oxford all the countries concerned were represented, and a full attendance of official medical historians in Canberra is expected. The collaboration initiated in 1946 and crystallized at Ottawa has already borne fruit. The continual interchange of documentation through the secretary of the Liaison Committee and the exchange of ideas is providing real help to all the historians. The meetings of the committee afford unique opportunities to hammer out individual problems, contribute to the greater accuracy and fullness of the nations' histories and speed their preparation.

The work of the Liaison Committee represents the first example of inter-government collaboration in the writing of history. Tribute is due to this wisdom and foresight on the part of governments in setting down the outstanding events and experience of our times for future guidance. Official histories today reflect the words of Cicero: "If no use is made of the labours of past times the world must always remain in the infancy of knowledge."

W. FRANKLIN MELLOR,
Secretary, United Kingdom Official Medical History of the War;
Secretary, Commonwealth and United States of America Official Medical Histories Liaison Committee.

British Medical Association News.

BRITISH MEDICAL JOURNAL.

Reduced Subscription Rate for Medical Students.

THE Editor of the *British Medical Journal* has announced that all medical students who have begun their clinical studies may receive the *British Medical Journal* at the reduced subscription rate of 10s. 6d. *per annum*. Application forms, which will have to be countersigned by the Dean, will shortly be available at medical schools.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held at the Children's Hospital, Carlton, on April 13, 1949.

Epithelial Heterotopia.

DR. REGINALD WEBSTER discussed the problems of epithelial heterotopia as observed in intestinal diverticula, and showed macroscopic and histological preparations to illustrate his talk. He said that the pathological material had been obtained from a group of children, the members of which all suffered a clinical crisis directly attributable to epithelial heterotopia in diverticula of the alimentary tract. By the term "heterotopia" was to be understood the occurrence at a given site in the digestive tract of depots of epithelium which were foreign to that region, but which were typical of some other portion of the alimentary canal. The most frequently observed example of such ectopia had been the intrusion of wayward intestinal villi in the mucous membrane of the fundus of the stomach; gastric glands adrift in the upper portion of the œsophagus, or marooned in the alien environment of the small intestine, and accessory pancreatic tissue in the wall of either stomach or intestine constituted other well-recognized types of heterotopia. The terms "superficial" and "deep" heterotopia indicated that the misplaced epithelial islets lay respectively within or without the *muscularis mucosæ*. In the vast majority of instances the phenomenon was a congenital developmental anomaly, but it might be initiated later in life by erratic regeneration of alimentary mucous membrane which had been destroyed by ulcerative processes. Thus epithelial heterotopia of the alimentary tract might be considered as superficial or deep, congenital or acquired. Accessory pancreatic tissue was the most frequently occurring instance of deep heterotopia. All the examples which Dr. Webster presented were within the group covered by the term "congenital superficial heterotopia", and all were associated with intestinal diverticula.

The first specimen was resected from a baby, aged ten months, who had exhibited intermittent and severe melena for one month prior to the laparotomy, which determined the origin of the hæmorrhage, in March, 1948. The operation revealed the presence of a diverticulum, arising from the mesenteric surface of a loop of small intestine, which from the character of its mucous membrane was obviously jejunum. The stoma, though patent, was very small and resembled a dimple. In that situation there was a shallow ulcer in the mucous membrane of the diverticulum, the ulcer unfortunately being traversed by the incision which laid the diverticulum open. The differing appearances of the mucous membrane of the intestine and diverticulum respectively suggested strongly that the mucosa of the diverticulum was not identical with that of the segment of jejunum from which it arose. Such impression was abundantly confirmed by the examination of microscopic sections. The section of the mucous membrane of the diverticulum had a surface layer of columnar mucus-secreting cells, in which appeared no goblet cells. Lying beneath that band of surface epithelium was a closely packed mass of glandular epithelium, the cells of which differed strikingly from those of the surface layer. The histological picture presented by the deeper stratum of the mucosa was a faithful representation of human gastric mucous membrane.

The second specimen was a short and blunt-nosed diverticulum of the small intestine of a boy, aged five years, whose dominating clinical feature was intestinal hæmorrhage. The mucous membrane lining the diverticulum was hyperplastic in character and its exuberant growth reduced the lumen of the diverticulum to a very narrow channel. The character of the mucous membrane indicated the jejunum, rather than the ileum, as the locus of the diverticulum, and a conspicuous feature was the presence of an ulcer, eroding the mucous membrane immediately around the stoma. Microscopic section of the mucous membrane of the diverticulum, which was histologically identical with that of the first specimen, showed a characteristic picture of gastric mucous membrane.

Dr. Webster said that apart from that occurring in relation to a Meckel's diverticulum, superficial heterotopia in the small intestine appeared to be a rare condition. The finding of gastric heterotopia in diverticula of two segments of the bowel which had mucous membrane typically that of the jejunum, and which from their situation on the mesenteric surface of the gut could not possibly be of Meckelian origin, indicated a revision of the statement of G. W. Nicholson—a worker of high repute in the field of heterotopia—that congenital gastric heterotopia had not been noted in the intestine below the level of the duodenum, except when located in persistent remnants of the vitelline duct. The hyperplastic quality of the ectopic gastric mucosa in both of the jejunal diverticula was an observation at variance with the dictum of A. L. Taylor—that in superficial heterotopia there was no excess of tissue, the foreign epithelium merely replacing that proper to the part concerned. Dr. Webster said that Meckel's diverticula, which were remnants of an incompletely obliterated vitelline duct, frequently harboured heterotopic mucous membrane. At the time of its definition in the embryo, the vitelline duct was possessed of an entodermal lining, which had precisely the same potentialities for development as the intestinal entoderm itself, and if for any reason the duct remained patent, either wholly or in part, then differentiation of its entoderm might ensue in any of the directions included in the potentialities of the original germinal layer. It was therefore not surprising to find epithelial heterotopia associated with Meckel's diverticula.

The boy from whom Dr. Webster's third specimen was obtained was thirteen years of age and was admitted to hospital in April, 1936, on account of a massive intestinal hæmorrhage which reduced his number of red blood cells

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to 1,880,000 per cubic millimetre, and his hæmoglobin value to 35%. Vague abdominal pain and intermittent melena continued for twelve days, at the end of which period exploratory operation disclosed the presence of a Meckel's diverticulum. Features of the diverticulum were, firstly, a mucous membrane exhibiting exaggerated plications or *valvulæ conniventes*, secondly, an ulcer in the mucous membrane of the neck, and thirdly, a sessile tumour at the fundus, which histological examination showed was composed of hyperplastic and ectopic gastric mucous membrane.

The fourth patient in the group was an infant, aged twenty months. Again the story was one of melena, three major attacks occurring during a period of four months, and anæmia. Other methods of investigation having been exhausted, Dr. Russell Howard had operated in September, 1946, and resected a Meckel's diverticulum, in the base of which was found an ulcer. Microscopic preparations from the diverticulum showed the presence of typical gastric mucosa.

Dr. Webster said that in the great majority of instances epithelial heterotopia in the alimentary tract was of academic rather than clinical interest; it was of not infrequent occurrence, as indicated by the work of A. L. Taylor, who had found 69 examples of varying types in two years of intensive study of the subject, and was limited, almost without exception, to that portion of the gut which lay above the level of the ileo-caecal valve. Dr. Webster stated that the congenital diverticula which he had presented were all true diverticula; they were identical in structure with the gut from which they opened, and were possessed of a serous coat, a double layer of muscle, submucosa and mucous membrane. At the stage in development in which the blueprints for such anomalies appeared, the fœtal entoderm retained its capacity for differentiation in the several directions which the modifications of mucous membrane appropriate to different portions of the alimentary tract required, and would seem to participate in the prevailing irregularity to the extent of differentiating perversely and elaborating mucosa normally indigenous to a distant site in the alimentary tract. It was when located in a diverticulum that heterotopic glandular tissue was likely to be the beginning of serious clinical developments. Without doubt the most frequent and significant clinical sign was intestinal hæmorrhage, as instanced by all the four children. Ulceration, either of the mucous membrane of the diverticulum, or of the normal mucosa in the neighbourhood of the stoma, commonly supervened, and had been generally attributed to the retention of relatively stagnant acid peptic secretion in a diverticulum of small stoma, or the devitalizing effect of such secretion on intestinal epithelium not conditioned or inured to it. Perforation also was a contingency which must be included in the reckoning; such a complication occurred in a boy, aged twelve years, from whom a diverticulum of the ileum, non-Meckelian, incorrectly diagnosed as a mesenteric cyst, and subsequently proved to contain gastric mucous membrane, was successfully removed at the Children's Hospital in March, 1944. That boy displayed no intestinal hæmorrhage, but presented with the clinical features of acute appendicitis. Dr. Webster said that peptic ulceration of a Meckel's diverticulum might be said to be established as a clinical entity and instances had multiplied in the literature since Humbert collected six illustrative cases, and reported a seventh in a French medical journal in 1924. Six of the seven diverticula in the series presented had manifested themselves by repeated intestinal hæmorrhages, and five had culminated in perforation. All the patients were young males, their ages ranging from eleven months to twenty-eight years. The five children presented by Dr. Webster were all boys, aged ten months, twenty months, five, twelve and thirteen years respectively. Prompt recovery from the essential surgical measures, and a happy issue out of their afflictions, had been recorded for all of them.

Meckel's Diverticulum.

DR. RUSSELL HOWARD showed a male infant, aged two years, with a Meckel's diverticulum. At the age of five months the child had passed bright blood *per rectum* and later bright blood with melena. No further symptoms occurred until nine days before admission to hospital on February 24, 1949, when he developed umbilical pain and two days later passed bright blood from the bowel. The hæmorrhage persisted intermittently until the time the child was admitted to the Children's Hospital. He was so exsanguinated that two pints of stored blood were administered immediately, the hæmoglobin value being estimated to be less than 20% (100% being 14 grammes). The hæmoglobin value then rose to 104%. Melena occurred two days later. Blood examination, X-ray examination after barium meal and barium enema, and sigmoidoscopy revealed no abnormality. As the cause of the bleeding was considered to be a Meckel's diverticulum with peptic ulceration laparotomy was performed on February 26, 1949. A Meckel's diverticulum one inch in length and half an inch in diameter was found arising from the antimesenteric side of the small intestine approximately two feet from the ileo-caecal valve. It was folded back onto the wall of the intestine and a chronic peptic ulcer was penetrating from the Meckel's diverticulum into the wall of the intestine. The diverticulum and about two inches of bowel were resected and end-to-end anastomosis was performed. Convalescence was interrupted by an adynamic ileus, which yielded to routine treatment with continuous intravenous administration of fluids and continuous gastric suction. The child, eleven days after operation, was sent home well. Dr. Howard remarked that the essential diagnostic feature in the clinical history was the passage of bright blood followed later by melena. That symptom suggested bleeding from the power part of the ileum, and the presumptive diagnosis was a Meckel's diverticulum. Most of the patients with the condition under discussion were children, although a patient, aged forty-two years, with similar symptoms had been reported. The majority were males.

Speaking on Meckel's diverticulum in general, Dr. Howard briefly described the embryology and anatomy and referred to the following pathological lesions, which might result in distinctive clinical features: (i) acute diverticulitis; (ii) acute intestinal obstruction: (*a*) knot formation, (*b*) peritoneal band, (*c*) intestinal stenosis, (*d*) volvulus, (*e*) intussusception; (iii) umbilical fistula; (iv) peptic ulcer formation: (*a*) hæmorrhage, (*b*) perforation, acute or chronic; (v) "mesenteric cyst"; (vi) incidental finding at operation. Of those possible manifestations intestinal obstruction was the most frequent; peptic ulcer formation, discovery at routine operation and acute diverticulitis were the next most common manifestations.

DR. ROBERT SOUTHBY, commenting on Dr. Howard's patient, said that he considered symptomless melena without evidence of portal hypertension or rectal polypus as being very suggestive of a Meckel's diverticulum causing bleeding.

DR. R. S. LAWSON gave a résumé of a review that he had made of the patients admitted to the Royal Melbourne Hospital during the years 1932-1939, who had been shown to have Meckel's diverticulum. There were 18 patients, 14 of whom were male and four female. Eleven of them presented with intestinal obstruction; four of the eleven patients died, three of them after removal of the diverticulum following division of a band. One presented with an intussusception and two with diverticulitis; in four cases the lesion was discovered incidentally. Dr. Lawson made two comments from a study of this clinical material, the first being that hæmorrhage was a rare manifestation of a Meckel's diverticulum in an adult, and the second that removal of the diverticuluum should not be undertaken if intestinal obstruction had occurred as the result of an obstructing band.

Dr. Russell Howard said that he agreed with Dr. Lawson's conclusions. He pointed out that usually the type of bleeding in children consisted of the passage of bright blood followed by a dark melena stool.

Cushing's Syndrome.

DR. M. L. POWELL presented a female child, aged seven years, with Cushing's syndrome. The child, a non-identical twin, had been admitted to the Children's Hospital on May 3, 1949, with the complaint that six months previously the mother had noticed a rapid development of obesity, especially of the face and trunk, retardation of growth as compared with her twin sister, and an excessive growth of hair on the back and to a lesser extent on the face. There was slight development of pubic hair. No change had been observed in the quality of the voice, and there was no excessive thirst, polyuria or aberration of appetite. The child was mentally normal. There had been no serious or unusual illness previously, and the family history was good. Examination revealed a child with the classical features of Cushing's syndrome. Gross obesity of a "buffalo" distribution involved mainly the face and abdomen. Considerable hirsuties was present in the temporal regions and on the upper part of the back, and there was a slight growth of pubic hair. The clitoris was not enlarged, and the child had not menstruated. The colour of the skin was distinctly violaceous, but there were no cutaneous striæ. The cardio-vascular system was normal, with the exception that the blood pressure was raised, the systolic pressure varying from 220 to 180 millimetres of mercury and the diastolic pressure from 140 to 100 millimetres of mercury. The abdomen was considerably swollen, but no mass or

viscus was palpable. Examination of the nervous system showed no abnormality. The *fundi oculorum* were normal, and rough clinical testing showed normal visual fields. The child's height was 41·5 inches and the weight 51 pounds 12 ounces. The urine contained a trace of sugar on three occasions, and microscopic examination showed 50 to 60 red blood cells per high-power field on two occasions. X-ray examination of the skull showed that the *sella turcica* was normal; the bones of the vault of the skull had a curious ground-glass appearance suggesting osteoporosis. The spine showed evidence of very slight and doubtful osteoporosis; ossification centres in the wrists were a little retarded. Blood examination showed a total erythrocyte count of 5,400,000 per cubic millimetre and hæmoglobin value of 122% (14 grammes being 100%). The serum content of sodium was 332 milligrammes *per centum* (normal 325 to 350 milligrammes *per centum*), and of potassium 18·2 milligrammes *per centum* (normal 18 to 21 milligrammes *per centum*). The sugar tolerance curve was flat with an upper level of 167 milligrammes per 100 millilitres of blood and a delayed rise one and a half hours after ingestion of 30 grammes of glucose. The urine contained no sugar when the patient was fasting or one hour after administration of glucose, but sugar was present three hours after. The excretion pyelogram demonstrated a very poor concentration of dye on both sides, and there was a cap-like shadow in the region of the left suprarenal gland which was very suggestive of a tumour in this region. X-ray examination of the chest showed an appearance within normal limits. Urinary 17-ketosteroids amounted to 6·05 grammes in twenty-four hours (normal 3·0 to 4·5 grammes).

Dr. Powell stated that Cushing, in 1932, was the first adequately to describe patients with this disorder. Cushing believed that the basic pathology was a tumour of the basophile cells of the pituitary gland. Cushing stated that even though the tumours might be very difficult to find and of microscopic size, and were at times poorly demarcated from the surrounding gland tissue, they were always present and were the cause of the syndrome. Dr. Powell considered that that view could no longer be maintained, for a number of patients had been described in whom there had been no adenomatous change demonstrable in the pituitary gland, but tumours elsewhere had been discovered, for example, benign and malignant tumours of the adrenal cortex, and also certain thymic and ovarian tumours. However, Crooke had shown that a curious hyaline change in the basophile cells of the anterior lobe of the pituitary was always present in patients with the syndrome. The precise nature of that observation was not clearly understood. It was probable that the adrenal gland was the final common pathway and the source of hormones which caused the syndrome.

Dr. Powell went on to say that it had been apparent for some time that there was an important difference between some patients with the syndrome. In some, sexual manifestations were predominant; in others, the changes were essentially those of a metabolic disturbance, such as obesity, and disorders of water metabolism and sugar metabolism. Dr. Powell mentioned that the child that he was showing fitted into the latter group. Albright had explained the two different types by postulating that in the "sexual" type there was over-production of the masculinizing hormone, which resulted in the clinical features of masculinization, precocity, and pseudohermaphroditism. In the "metabolic" type the characteristic features were obesity, lack of muscle tissue, an upset in carbohydrate metabolism and osteoporosis. Albright explained those disorders as being due to over-production of the "S" hormone of the adrenal gland. The metabolic type of disorder was at times now referred to as Cushing's syndrome, whilst the sexual type was called hyperadrenocorticism. Soffer, of New York, regarded the distinction as of considerable clinical importance; patients with the "sexual" type of disorder usually did well after operation and removal of a tumour, while patients with the "metabolic" type of disorder usually did badly and frequently died shortly after operation. The cause of post-operative collapse and death was considered to be non-functioning of the adrenal gland on the opposite side from atrophic change. However, the exact nature of the collapse was not completely understood, for it did not respond to treatment like an acute Addisonian crisis.

The patient under discussion, Dr. Powell stated, seemed to belong to the group with the "metabolic" type of Cushing's syndrome and the ætiology appeared to be a tumour in the left adrenal gland. As the disease was invariably fatal in less than five years if untreated, it was considered wise to request a surgeon to attempt laparotomy and explore for a left adrenal tumour. Dr. Powell mentioned that for certain malignant tumours with secondary growths in other tissues the immediate post-operative results appeared to be better, presumably because the secondary deposits continued to secrete hormones. On that basis partial removal of the tumour might be a possible method of approach, that being suggested by the surgical approach to thyreotoxicosis. Dr. Powell said that should laparotomy fail to disclose an adrenal tumour X-ray irradiation of the pituitary fossa would be advisable. Sossman, of Boston, had recorded a definite success with X-ray treatment in a case of Cushing's syndrome due to a pituitary adenoma.

DR. RUSSELL HOWARD said that he had seen the patient in consultation and was quite prepared to undertake surgical exploration of the left adrenal gland; he proposed to do that by a thoracic-abdominal approach, with resection of the tenth rib. Through the same incision he could also have access to the right suprarenal gland.

DR. L. P. WAIT said that he had a patient with an adrenal tumour, which had caused a sexual type of Cushing's syndrome. The tumour had been removed about one year previously and the child had done very well since.

DR. KATE CAMPBELL suggested that, as the "S" hormone of the adrenal cortex might be the factor producing the syndrome in the child, 11-oxy-ketosteroids should be estimated in the urine. She was assured that that had not been done because at the present time the facilities for the test did not exist in Melbourne.

Special Correspondence.

NORTH AMERICAN LETTER.

FROM OUR SPECIAL CORRESPONDENT.

SINCE the last letter concerning recent developments in the State of California, President Truman's National Health Bill has been introduced into Congress. This has had the effect, in California and in other States, of delaying or indefinitely postponing further consideration by States of local bills for the same purpose.

The country has had the details of the proposed national health plan for a month now, and the reactions to it have been varied but vocal. It took some time for many editors and medical executives to digest the 163 page message to Congress, and some of them have come through the ordeal confused, others angered, and some elated. Last week President Truman served notice on the Congress that he wanted no more delay on his message, and he is presently seeking to make this matter a major issue in this year's legislation. It is one measure on which he faces no overt opposition from the so-called Southern Democrats, and for this reason alone action is likely.

The proposal contains a multiplicity of objectives, some in medical education, research, hospital construction, rural medical aid and so on. But the major matter for thought is the plan for "prepaid personal health insurance benefits", which occupies about one-third of the 163 pages.

Direction of this vast scheme will be concentrated at Washington in a five-man Board, as part of the Federal Security Agency One member of this Board will be a licensed medical practitioner. Along with two other members, he will be appointed by the President on the advice of the Senate. The final two members of the Board will be the Surgeon General of the U.S. Public Health Service and the Federal Commissioner of Social Security. The Board will be responsible to the Federal Security Administrator. The Board can delegate any of its powers except its power to make regulations.

A National Advisory Medical Council is to be set up, with the chairman of the above-mentioned five-man Board as its chairman also. His sixteen Council colleagues will be appointed by the Federal Security Administrator, who must see that eight of them come from rural or urban areas where they are personally familiar with the day-to-day medical care and public health arrangements, and must fairly represent the potential beneficiaries of the plan. Of the remainder, six must truly represent the professional groups who will provide the medical and ancillary professional services, and they must be outstanding in their respective professions. It is not intended that they should be mere technical advisers, since provision is made for them on a consultant basis.

A similar design for State committees and for local committees has been outlined, and it is notable that throughout there must be a majority of the committee representative of the people who are to receive the benefits. The intention is evidently to make Federal aid to a State plan contingent

upon a certain standard of organization and administration, use of available personnel, hospitals *et cetera*. As in the Federal governing body, there will be local professional advisory groups. If the State fails to set up an approved programme by July 1, 1951, or fails to get it in motion, the Federal Government will administer such a plan within the State. Eventually the State may gain control of the scheme if it submits an approvable plan.

The raising of funds for this gigantic plan is to begin in 1951, through a 3% tax on all wages up to and including $4,800 per year of earnings. In addition the cost of dental and home nursing services will be put into the pot by the Federal Government. In 1952 ten million dollars are to be made available, and in 1953 another fifteen million dollars, for the training and education of professional and technical personnel for the administration of the programme.

All licensed physicians and dentists will be eligible to serve under the plan, and specialists will be designated to be paid at specialist rates. Medical care by general practitioners and specialists will be provided, as will also dental services, home nursing services, and a host of technical and diagnostic services.

Chronic diseases already cared for at public expense will not be charged to the insurance account. New patients with such diseases as tuberculosis, mental disease *et cetera* will have to be transferred to special hospitals for this purpose within thirty days of the diagnosis being made. The Bill specifically charges the Board at Washington with the responsibility of making studies and recommendations concerning the care and prevention of mental disease and of chronic diseases.

Free choice of doctor is provided for, and access to a specialist through the general physician is contemplated. The same will obtain for hospitalization, home nursing services, and auxiliary services. The physician also has free choice of patients, that is, he must agree to serve them before they can call upon him. Basis of payment is to be provided through fee for service, capitation, salary, or any combination of these to be determined for each local area by a majority of the practitioners in that area. The minority may be paid in another manner, if it promotes the efficiency of the scheme. The doctor has free choice of geographical location of his practice. Fee schedules are to reflect the need for post-graduate study, adequate vacations, and so on.

Federal subsidies for all educational institutions whose graduates are in the professions concerned with medical care are proposed to start next year, with payments of $300 for every student now registered, and $1700 per student for each student above the average number heretofore. Scholarships will be provided for those who are willing to spend one-half of the total time over which he received assistance, in a designated place where personnel are needed, or in the available units of the United States Government medical services. Medical research is to be supported on a wide list of major diseases, and this will be amended from time to time. Funds can be given to private agencies doing such research also. Grants for child and maternal health and for rural areas, hospital construction and local health areas are also included in this enormous Bill.

Correspondence.

THE ADRENALS IN RHEUMATISM.

SIR: The history of the treatment of rheumatoid arthritis is strewn with the corpses of remedies for which extravagant claims have been made in the medical and lay Press.

Over a year ago Dr. L. J. A. Parr impressed me with the value of adrenaline in certain cases, and I can fully substantiate the claims made in THE MEDICAL JOURNAL OF AUSTRALIA (May 28) by Dr. Parr and Dr. Paul White. My experience of a small series of cases convinced me that adrenaline is a most important adjunct to treatment, that asthenic rheumatoid arthritics are more than ordinarily liable to pallor, tachycardia and sweating after an adrenaline injection, that this tendency is mitigated by first completing a course of insulin-glucose before recourse to adrenaline, and that adrenaline is unnecessary in cases already responding well to treatment.

Adrenal medication in rheumatoid arthritis is not new. Dr. L. J. A. Parr employed it prior to the war. In 1946, Dr. Harry Coke at the Charterhouse Rheumatism Clinic, London, was using "Cortrophin" (Organon), the adrenocorticotrophic hormone of the anterior pituitary, with good effect in asthenic cases.

It is to be hoped that the claims made for "Compound E" will be taken with caution, and that over-enthusiastic use will not bring into disrepute a remedy that may eventually prove to be of inestimable value.

Yours, etc.,

JOHN A. SHANASY.

149 Wickham Terrace,
Brisbane,
June 6, 1949.

A NATIONAL HEALTH SERVICE.

SIR: Various members of the Federal Government have denied publicly that under the regulations governing the operation of *The National Health Service Act* there will be a loss of professional secrecy. It will, therefore, be opportune to repeat the quotation from the Second Reading speech of the Prime Minister on the Bill (*Hansard*, page 4157), which has already appeared in this journal:

> All that a doctor will be asked to do is to furnish a return, showing the people he has attended and what they have been attended for.

The Federal Publicity Committee is anxious that members should not fail to make the Prime Minister's statement known to their patients.

Yours, etc.,

J. H. PRIESTLEY.
Assistant General Secretary,
Federal Council of the British Medical Association in Australia.

135 Macquarie Street,
Sydney,
June 7, 1949.

THE PHARMACEUTICAL BENEFITS ACT.

SIR: I feel reasonably sure that I am not the only member of the medical profession who finds himself or herself in complete disagreement with the policy of the British Medical Association as regards national health services.

Upon my return from abroad last year I was surprised to read in a newsletter issued over the signature of Sir Henry Newland that the Federal Council of the British Medical Association was not opposed to the free medicine scheme of the Australian Government. I wrote Sir Henry Newland about this matter and to my amazement in his reply he confirmed this. Since then the same statement has appeared several times, one of the latest being that issued by the Victorian Branch. Therefore there is no doubt that officially the British Medical Association is not opposed to the socialistic policy of the present Government in so far as such policy appertains to medical matters.

I do not think that all members of the British Medical Association fully realize the implications of this acquiescence by the British Medical Association in the so-called free medicine.

It is quite plain that the Australian Government is acting upon a plan and that plan is the socialization of the means of production, distribution and exchange. It is also quite plain that the socialization of medicine is and must be included in that plan. The Government is quite sincere in its actions for they are based upon the fundamental belief of all socialists that individuals cannot work to the best interests of themselves and society unless they are enmeshed in a planned economy originated and administered by bureaucrats. The Government, however, knows full well that it could not implement its policy of socialization all in one step as the opposition to such massive proposals would also be on a massive scale, but it hopes to be able, and it will be able, to implement its full socialization policy by introducing it in minimal doses. Free medicine is, of course, one of these minimal doses; it is the first step in full socialization of the profession. Free medicine must inevitably be followed by free doctoring —one without the other is absurd. This is the point that the British Medical Association has failed to see and thus has led us near to the disastrous policy of socialization of medicine.

To me it is pathetic to see a great organization of splendid men and women agreeing in a policy that will inevitably lead to all sorts of anomalies and injustices and finally to a grave deterioration in the standard of medicine whilst quarrelling about small details. Surely it is not too late to reverse this policy—to see the dangers ahead

and withdraw entirely from any association with the wild cat schemes of doctrinaires.

I have on former occasions pointed out that there is no need for free medicine or free doctors in a country that spends sixty to seventy million pounds yearly on alcohol, sixty million pounds on tobacco, and at least two hundred million pounds on gambling, let alone the untold amount spent on picture shows. It is just plain absurdity to state that people cannot afford to pay for their medical expenses. Further, there is no public demand for this change, and if such free schemes are implemented the cost to the people of Australia will be far more, eventually, than what is now paid to their medical advisers. There are 5000 medical people practising in Australia; if we allow an income of £5000 per year to each of these (which is a very outside estimate) we get a sum of twenty-five million pounds per year paid to doctors or between £3 and £4 per year per inhabitant. If hospital and other expenses amount to the same it is seen that under present free conditions people are paying £6 to £8 per year per head for their health expenses. More than twice this is spent on drink and tobacco, two drugs which are responsible for a fair amount of their invalidity. I call upon all members of the British Medical Association who value freedom, who are proud of the heritage which is theirs, and who are sincere in their work to write and demand a reversal of the official attitude of their leaders. It will soon be too late.

Yours, etc.,

PAUL G. DANE.

111 Collins Street,
Melbourne.
June 2, 1949.

Obituary.

HAROLD SKIPTON STACY.

WE regret to announce the death of Dr. Harold Skipton Stacy, which occurred on June 2, 1949, at Sydney.

Congresses.

THIRTEENTH CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY.

THE Thirteenth Congress of the International Society of Surgery will be held at New Orleans, Louisiana, United States of America, from October 10 to 15, 1949. Communications regarding the congress should be addressed to the International Society of Surgery (*Société internationale de chirurgie*), 141 Rue Belliard, Brussels, Belgium, or to the secretary of the congress, Dr. Mims Gage, Ochsner Clinic, New Orleans, Louisiana.

Medical Appointments.

Dr. J. S. Skipper has been appointed gynæcological and orthopædic registrar at the Royal Adelaide Hospital, Adelaide.

Nominations and Elections.

THE undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Jose, Geoffery Alan, M.B., B.S., 1948 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

Cowling, Brian Deucalion, M.B., B.S., 1948 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association:

Rowe, William Vivian, M.B., B.S., 1948 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

Blackburn, Susanne Burton, M.B., B.S., 1948 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

Maddern, John Pearce, M.B., B.S., 1948 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Khan, Edward Joseph, M.B., 1941 (Univ. Sydney), Smith Street, Fairy Meadow, New South Wales.

Noake, Bruce Wesley, M.B., B.S., 1948 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

Diary for the Month.

JUNE 21.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JUNE 22.—Victorian Branch, B.M.A.: Council Meeting.
JUNE 23.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 24.—Queensland Branch, B.M.A.: Council Meeting.
JUNE 28.—New South Wales Branch, B.M.A.: Ethics Committee.
JUNE 29.—South Australian Branch, B.M.A.: Annual Meeting.
JUNE 30.—New South Wales Branch, B.M.A.: Branch Meeting.
JUNE 30.—South Australian Branch, B.M.A.: Annual Dinner.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135 Macquarie Street, Sydney): Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester United Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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